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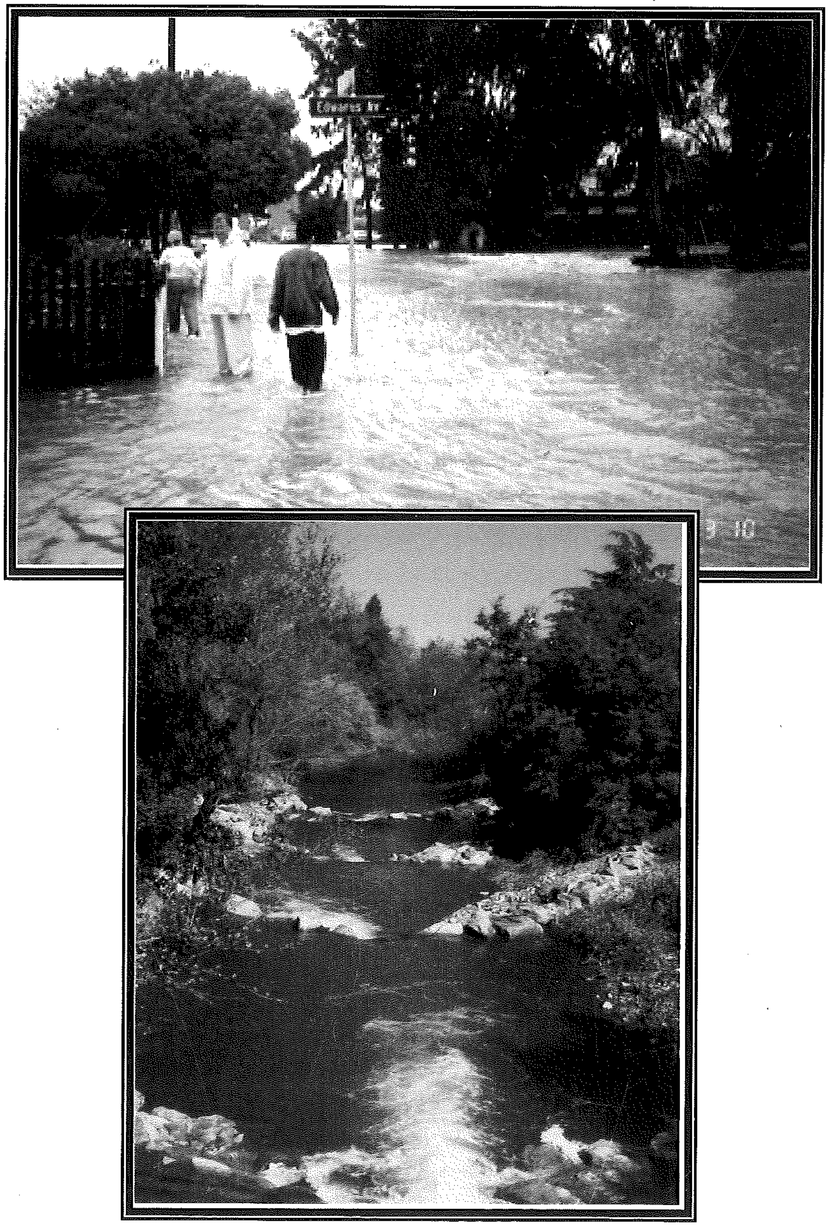
Limited Reevaluation Report:
Proposed Project Modifications

Upper Guadalupe River Project
San Jose, California

APPENDICIES



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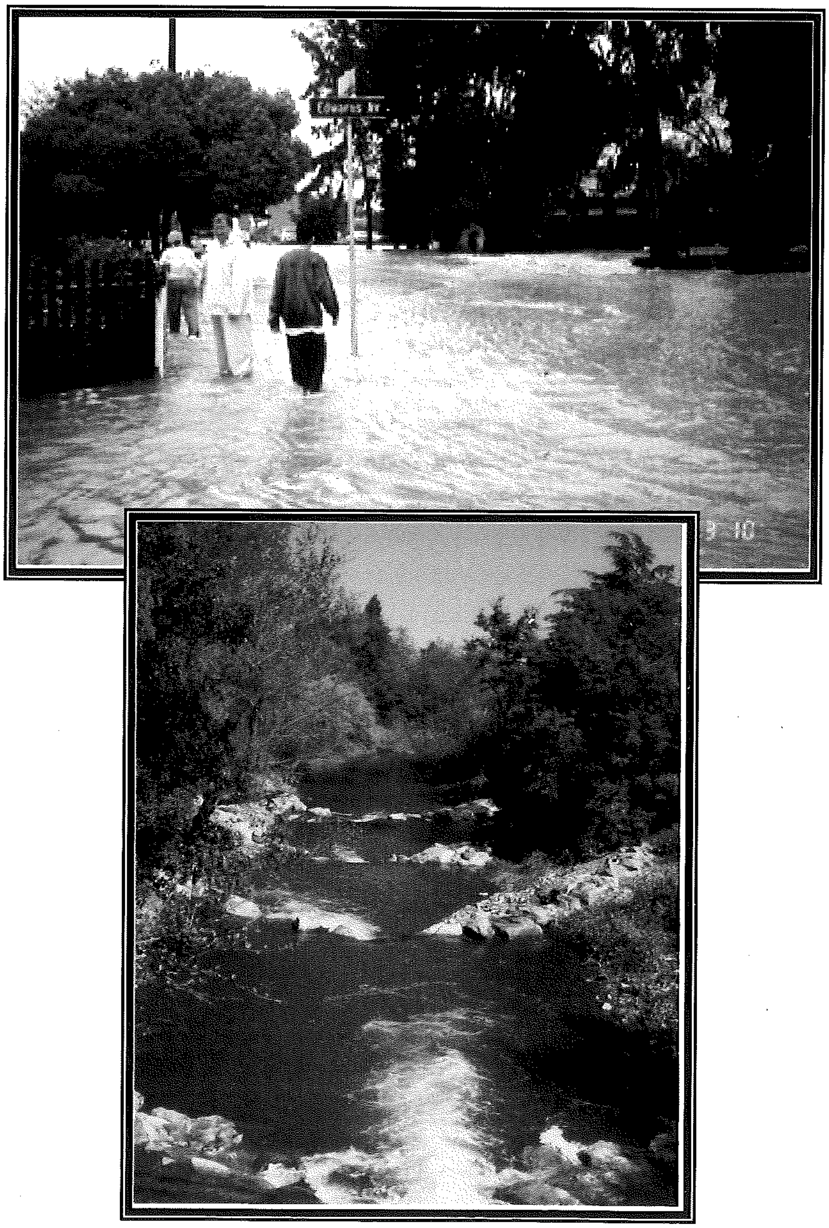

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TECHNICAL APPENDICIES

- T1. ENVIRONMENTAL APPENDIX
- T2. HYDROLOGY AND HYDRAULICS APPENDIX
- T3. REAL ESTATE PLAN
- T4. MICRO-COMPUTER AIDED COST ESTIMATES (MCACE)
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- A1. QUALITY CONTROL AND QUALITY CONTROL PLAN

UPPER GUADALUPE RIVER FLOOD CONTROL PROJECT
LIMITED REEVALUATION REPORT

T1: ENVIRONMENTAL APPENDIX

1.0 Introduction

The San Francisco District has re-evaluated the two primary plans previously considered in the feasibility report for this project. These are the Valley View Plan, which would provide a 50-year level of flood protection, and the Locally-Preferred Plan (LPP) which would provide a 100-year level of flood protection. The Valley View Plan was selected as the National Economic Development (NED) plan in the 1998 feasibility report and was authorized by Congress in 1999 as the basis for project cost-sharing, while the LPP was authorized for construction. This report describes the basis for the post-feasibility study modifications of both alternatives and their mitigation plans, evaluates the environmental impacts of these two alternatives, and provides updated status on environmental compliance efforts.

2.0 Study Area Environment

The Guadalupe River drainage lies in the Santa Cruz Mountains and the Santa Clara Valley, Santa Clara County, California. The upper portion of the watershed is largely covered with natural vegetation, while the lower portion, including the project area, is almost entirely urbanized. Several reservoirs in the upper watershed modify the river's hydrology and sediment budget. Much of the length of the river within the study area has been channelized sometime in the past, and the downstream portions have experienced severe channel incision, most likely due to an urbanized hydrology, reduced sediment supply, and differential settlement due to past groundwater overdraft.

The primary terrestrial habitats along the river are riparian forest, ruderal scrub, ruderal herbaceous vegetation, and landscaping. Small amounts of freshwater wetland are also found along the river. Of these habitats, riparian forest is of particular concern regionally. This habitat is very productive, harbors a large variety of bird species, and is very important to many of those bird species. The riparian forest along the river has been considerably degraded due to past removal and fragmentation of this habitat, urban encroachment, invasive exotics, and channel incision. Nevertheless, this riparian forest is one of the best remaining within the northern Santa Clara Valley. Over 90% of the riparian forest in California has been lost due to human activities, and further losses are strongly discouraged by the resource agencies. Fragmentation of riparian forest has undoubtedly altered its ecological functioning and habitat value in most locations including the Guadalupe River, so avoidance of further habitat fragmentation and reduction of existing fragmentation are important considerations.

Aquatic habitat in the study area consists almost entirely of riverine habitat. Of particular concern is one cover type within this habitat, *shaded riverine aquatic (SRA) cover*, provided by riparian forest that overhangs the river. In the study area, while SRA cover provides several benefits to special-status fish species (see below) such as additional food and escape cover, its most important role is in the moderation of water temperatures. Thermal conditions in the river are marginal for these species due to degraded habitat conditions, particularly in and above the upstream portions of the project area. Without the reduced water temperatures SRA cover provides during the certain months of the year, juvenile salmonids such as steelhead trout could not reliably migrate through the local riverine habitat between upstream spawning areas and San Francisco Bay.

Removal of SRA cover has particularly large habitat impacts, negatively affecting both terrestrial and aquatic habitats. Protection and enhancement of SRA cover is a very high priority for the resource agencies, and is critical to efforts to restore viable and healthy populations of migratory salmonids in the region.

The Guadalupe River supports two species of salmonids: the chinook salmon *Oncorhynchus tshawytscha* and the steelhead trout *Oncorhynchus mykiss*. Both species are of very high concern to the resource agencies, environmental groups, and the general public. Steelhead trout have a life cycle similar to salmon, spawning and rearing in fresh water before growing to adulthood in the ocean. That is, both species are *anadromous*. Chinook salmon mainly occur downstream from the study area in downtown San Jose, although some spawning has occurred in and above the study area. Steelhead trout in this watershed are more dependent on the study area and areas farther upstream. They may be increasing their use of the study area as a migration corridor, as better spawning habitat has been made accessible upstream by local mitigation and fish passage projects.

Local steelhead trout belong to the Central California Coast Evolutionarily Significant Unit (ESU), a population listed as threatened under the Endangered Species Act (ESA). This river had been designated as critical habitat for the steelhead trout, but that designation has now been withdrawn. Local populations of chinook salmon are not currently listed under the Endangered Species Act but are the subject of considerable regulatory and public concern. The Guadalupe River is designated as essential fish habitat for the chinook salmon under the Magnuson-Stevens Fisheries Act.

Table 1 shows special-status species which require mitigation measures under this project. Table 2 shows listing and designation actions by the National Marine Fisheries Service (NMFS) relevant to salmonids in the Guadalupe River watershed. No other listed, proposed, candidate, or sensitive species in the study area are of significant concern in plan formulation or for mitigation of impacts. Impacts to habitat for two sensitive species, the yellow warbler and San Francisco forktail damselfly, will be mitigated in the course of mitigating vegetation and wildlife habitat impacts. The California red-legged frog is not found in the project area. Requirements for the burrowing owl apply only to pre-construction surveys and potential relocation if nesting pairs are found.

Table 1: Special-Status Species Which Require Mitigation Measures

Common Name	Scientific Name	***Status***	***Presence***	***Impact***	Mitigation
Steelhead trout	*Oncorhynchus mykiss*	threatened; critical habitat withdrawn	annual migrant; some spawning	significant pre-mitigation habitat loss	SRA cover mitigation, construction measures
Chinook salmon	*Oncorhynchus tshawytscha*	sensitive; essential fish habitat designated	occasional	significant pre-mitigation habitat loss	SRA cover mitigation, construction measures
Western burrowing owl	*Speotyto canicularia hypugea*	species of concern	rare	unlikely	surveys, and relocation if needed
Yellow Warbler	*Dendroica petechia*	species of concern	uncommon nester	possible loss of nesting and foraging habitat	riparian forest mitigation plantings
San Francisco Forktail Damselfly	*Ischnura gemina*	species of concern	potential habitat	unlikely	wetland mitigation

Source: Regulatory final EIR/EIS, Volume VI, Table 4.13-1 and pages 4.13-12 through 4.13-30
Notes: Habitat mitigation for impacts to the above species will be accomplished through general habitat mitigation and is not classified as mitigation specifically for sensitive species. The California red-legged frog *Rana aurora draytonii*, a threatened species, is not present in the project area. No impacts are expected on this species. The FWS has concurred with this determination in writing.

3.0 History of Plan Formulation and Coordination with the Resource Agencies.

3.1 Non-Federal Studies and the Locally-Preferred Plan

The non-Federal sponsor, the Santa Clara Valley Water District (SCVWD), pursued its own flood-control studies and environmental compliance work independently of and parallel with the Corps feasibility study, due to uncertainties about Federal funding and because the SCVWD planned additional flood-control work beyond the boundaries of the Corps feasibility study. These environmental compliance actions included separate compliance with the National Environmental Policy Act (NEPA), California Environmental Quality (CEQA), and Section 404 of the Clean Water Act. Thus, there were two parallel sets of Environmental Impact Report/Environmental Impact Statement (EIR/EIS) documents: an EIR/EIS produced by the Corps for the feasibility study in support of the authorizing document, and an EIR/EIS produced by the non-Federal sponsor in support of their Section 404 permit application. The final EIR/EIS in support of the authorizing document was circulated in April 1998 and the final EIS supporting the regulatory decision (dated November 1999) was circulated in August 2000. The Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) completed in 2005 are discussed in Section 5 below.

Table 2: Listing and Designation Actions by NMFS for Local Populations of the Steelhead Trout, the Chinook Salmon, and Their Habitat

Date	Action
August 9, 1996	The Central California Coast Evolutionarily Significant Unit (ESU) of steelhead trout proposed for listing as endangered.
August 18, 1997	The Central California Coast ESU listed as threatened.
February 5, 1999	Designation of critical habitat for the Central California Coast ESU proposed.
February 16, 2000	Critical habitat for the Central Calif. Coast ESU designated.
January 17, 2002	Essential Fish Habitat designated for the chinook salmon, including the Guadalupe River.
April 30, 2002	Court-approved consent decree (due to lawsuit) for withdrawal of Central California Coast ESU critical habitat designation pending reevaluation using economic criteria.
September 29, 2003	Central California Coast ESU critical habitat designation permanently withdrawn.
December 14, 2004	NMFS proposes new critical habitat designation for the Central California Coast ESU. The Guadalupe River watershed is excluded for economic reasons.

The SCVWD developed a Locally-Preferred Plan (LPP) providing protection from a 100-year plan. This plan uses a bypass channel in reaches 6 through 8 and channel widening in upstream reaches. The SCVWD refined this plan and its mitigation features in consultation with the U.S. Fish and Wildlife Service (FWS) and the California Department of Fish and Game to avoid areas of high habitat quality and optimize provision of 100-year flood protection relative to biological impacts. As indicated below, the LPP and its mitigation plan were eventually adopted by the Corps as its 100-year plan for study purposes.

3.2 Valley View (50-year) Plan

3.2.1 Initial Formulation of the Valley View Plan

At the initial F4 conference in 1994, it was determined that none of the alternatives being examined in the study had a clear economic justification based on then-current analyses. Therefore, a new alternative, the Valley View Plan, was formulated in an attempt to find a relatively inexpensive and economically-viable alternative. This plan was formulated to minimize costs while achieving substantial economic benefits. It provide protection against a 50-year flood based on available information at the time. At the second F4 conference the District received permission to proceed with the feasibility study using the Valley View Plan, the LPP, and a plan providing protection from a 20-year flood as the study alternatives. The original version of the Valley View Plan will henceforth be referred to as the 1998 Valley View Plan since it was carried forward to the 1998 final feasibility report.

The 1998 Valley View Plan included channel widening in Reach 7 and portions of several upstream reaches, and floodwalls in Reach 8. Bypass channels were not included due to their higher real estate and construction costs. The widened channel was to have a bench set only three feet above the channel invert to reduce the width of the bench and associated real estate costs. Riparian forest would be planted on a strip on the bench next to the low-flow channel and on other non-forested areas to mitigate impacts, subject to hydraulic limitations. Minimization of real estate costs and construction costs determined which bank would be widened. Widening was proposed for only one side of the channel to reduce habitat impacts, but other actions specifically to avoid or reduce impacts were not proposed.

3.2.2 Impacts, Mitigation, and FWS Coordination

The 1998 Valley View Plan would have smaller impacts on riparian forest than the LPP, with 6.5 acres being removed in contrast to 10.46 acres under the LPP. However, no effort was made to avoid impacts to areas of higher-quality habitat so these losses were disproportionately of higher-quality habitat. Losses of overwater shade would be 4,034 feet as opposed to 4,775 feet for the LPP, but impacts to undercut banks would be much higher at 2,535 feet vs. 1,100 feet for the LPP. Impacts in Reach 7 and portions of upstream reaches would be severe, with all riparian forest and SRA cover (including shade and undercut banks) being removed on one side of the river. However, there would be no impacts in Reach 9, a sensitive area with high-quality habitat that would have significant impacts under the LPP.

The District developed a draft mitigation plan for the 1998 Valley View Plan for evaluation along with the alternative itself under the Habitat Evaluation Procedures (HEP) study by the FWS. Initially a 2:1 compensation ratio for riparian forest habitat was used as a placeholder pending completion of the HEP. The revised draft Coordination Act Report (CAR) from the FWS evaluated the Valley View Plan and the LPP and provided compensation ratios for both plans, for both terrestrial and aquatic impacts. The riparian forest compensation ratio for the Valley View Plan was higher than for the LPP due to its removing substantially better habitat areas on average.

The mitigation plan for the Valley View Plan compensated for habitat impacts by providing substantial mitigation plantings to produce a long-term increase in habitat value, offsetting short-term losses. However, the FWS expressed concern in its CAR that the benches in this plan would be too low relative to the low-flow channel invert for any trees other than willows to grow in the mitigation areas on these benches. Since these mitigation areas would not support the some of the same kinds of trees such as cottonwoods that would be removed by construction, riparian forest mitigation might not be fully in-kind. The FWS also expressed concern that the willows planted on this bench might not recreate the undercut banks, important for fish, that would be lost through construction. Finally, the FWS noted that the large temporary losses of shade-producing vegetation resulting from this plan could negatively affect the small runs of anadromous fish on this river. However, none of these issues were quantified in the HEP. Additional coordination with NMFS after revision of the Valley View Plan is described in Section 5.0 below.

3.2.3 Coordination with the National Marine Fisheries Service

Efforts to coordinate the Valley View Plan and the LPP with the National Marine Fisheries Services (NMFS) began immediately after listing of the steelhead trout as threatened was proposed in August 1996. The District recognized that listing of this species under the Endangered Species Act could affect the project, and various efforts were made to engage NMFS in the planning process. Four separate written requests were made from September 1996 to December 1997 for a conference or formal Section 7 consultation under the Endangered Species Act. NMFS denied or ignored these requests, insisting that the project was not well-defined even after issuance of the draft EIS supporting the regulatory decision in 1997. Formal consultation for the Section 404 permit was granted by NMFS in 1999, a year and a half after issuance of the feasibility report and the associated final EIR/EIS, and shortly before Congress authorized the LPP for construction. Table 3 shows the chronology of coordination efforts with the NMFS.

Meanwhile, the SCVWD was carrying out a numerical modeling effort to determine the impacts of the LPP on river temperatures. This modeling determined that construction in a six-year period would cause excessive water temperature impacts for anadromous fish, while a 25-year construction period would have acceptable impacts. Subsequent modeling results for a fluvial geomorphic plan, completed in 1998 for the EIS supporting the regulatory decision, showed that removal of large amounts of shade in Reaches 6-8 under this plan would have an extreme and unacceptable impact on water temperatures. Based on these results, NMFS determined in informal consultation that the fluvial geomorphic plan would not be acceptable due to adverse impacts on chinook salmon and the listed steelhead trout.

Subsequent to Congressional authorization of the LPP for construction, the District and the SCVWD conferred and determined that the 1998 Valley View Plan might not be implementable due to the likelihood of somewhat similar thermal impacts. This plan would remove all shade on one bank of the river in Reach 7 and in a number of upstream locations due to channel widening and a low bench height relative to the LPP (hereafter referred to as the *Authorized Project*). Vegetation removed under this plan would disproportionately consist of tall trees that provide the best shade and habitat enhancements for salmonids, due to the low bench height and the relatively high habitat quality in the impact sites.

As a result, the District wrote a letter to NMFS dated March 1, 2000, requesting that NMFS determine whether the Valley View Plan would be implementable. NMFS responded in a letter dated April 5, 2000, indicating that the Valley View Plan was not acceptable and might result in a jeopardy opinion if it were included in Section 7 consultation. NMFS had previously refused to include the Valley View Plan in the formal Section 7 consultation process, insisting that they would consult on only one alternative.

NMFS based this determination on the nature and timing of the impacts from the Valley View Plan. The use of channel widening instead of a bypass in Reach 7 and the low bench height in all widening locations would have greatly increased impacts in those locations relative to impacts from the Authorized Project. While the Authorized Project would have greater total impacts on riparian forest and overwater shade, NMFS was very concerned about the nature of the SRA impacts and the concentration of these impacts in reach 7. The low bench height would have removed all trees from one bank and ensured the loss of all undercut banks and exposed roots on that bank; thus, SRA impacts would have been more severe on the average per linear foot.

NMFS was also concerned about the three-year construction schedule for this alternative which would concentrate the impacts into a short period. This would mean that mitigation plantings would not have time to grow in advance of any of the habitat impacts. This would cause severe thermal impacts in Reach 7.

The NMFS letter further stated that an acceptable plan would need to use bypasses where the Authorized Project used bypasses, and for reaches where widening was proposed, widen on the same side and at the same elevation as in the Authorized Project, and use a lengthy construction schedule. These conditions were specified to minimize impacts on areas of better habitat and on water temperatures.

Additional coordination with NMFS after revision of the Valley View Plan is described in Section 5.0 below.

3.2.4 Revision of the Valley View Plan

The feasibility report had determined that the Valley View Plan, a plan offering a 50-year level of protection, would be the National Economic Development (NED) plan. The April 5, 2000 letter from NMFS indicated that the Valley View Plan was not acceptable for environmental reasons. Therefore, the District had to modify this plan to make it acceptable.

As a result of extensive coordination with the resource agencies, the Authorized Project had been significantly revised by the SCVWD prior to the feasibility report to avoid and reduce impacts. With these modifications, this alternative had the support of these agencies despite significant environmental impacts. The feasibility report endorsed this design of the Authorized Project as the most practical for the 100-year level of protection. Given the extensive work that had been done to optimize the Authorized Project, and the requirement by NMFS that an acceptable plan would have to use the same basic channel modifications, basic hydraulic features of the Authorized Project (location-specific and bank-specific bypass channels, channel widening, and bench heights) were used as the basis for modifying the Valley View Plan to make it environmentally acceptable.

Table 3: Chronology of Efforts at Coordinating with the National Marine Fisheries Service, with Relevant NEPA Milestones Noted

Date	**Action**
September 4, 1996	Letter to NMFS from the Environmental Planning Section requesting a Section 7 conference on the steelhead trout.
February 1997	Draft EIR/EIS in support of the regulatory decision released to public.
June 5, 1997	Letter to NMFS with biological assessment from the Environmental Planning Section requesting formal consultation for the steelhead trout.
July 21, 1997	Letter from NMFS denying request for formal consultation.
Sept. 1997	Draft EIR/EIS for feasibility study released to public.
October 15, 1997	Letter to NMFS from the district engineer requesting formal consultation for the steelhead trout for the SCVWD permit application. NMFS stated in response that consultation would be deferred.
November 17, 1997	Letter from NMFS commenting on the Corps feasibility study draft EIR/EIS. Comments were general and procedural; no comments were made on the Valley View Plan.
December 23, 1997	Letter to NMFS responding to the November 17 NMFS letter and requesting formal consultation for the LPP.
April 1998	Final EIR/EIS for feasibility study released for public.
September 1998	New biological assessment with temperature modeling results submitted to NMFS by the Regulatory Branch. NMFS claimed project was still undefined and that formal consultation could not be started.
June 1, 1999	Record of Decision for feasibility EIR/EIS signed.
July 30, 1999	Meeting between NMFS, the SCVWD, and Regulatory Branch resolved some LPP project questions to the satisfaction of NMFS.
September 23, 1999	Letter from the SCVWD to NMFS resolved remaining questions over the LPP to the satisfaction of NMFS.
March 1, 2000	Letter to NMFS requesting input on acceptability of Valley View Plan.
April 5, 2000	Letter from NMFS stating that Valley View Plan not be acceptable.
April 18, 2000	Biological Opinion on the LPP provided to the Corps by NMFS.
August 2000	Final EIR/EIS in support of the regulatory decision released.
January 12, 2001	Letter to NMFS from the Regulatory Branch listing conservation measures to be implemented under the Magnuson-Stevens Fishery Conservation and Management Act
March 3, 2003	Letter to NMFS from the Environmental Planning Section asking whether offsite mitigation would be acceptable for project impacts to steelhead trout along the upper Guadalupe River.
August 20, 2003	Response from NMFS indicating that offsite mitigation would not be acceptable for impacts to steelhead trout in the Guadalupe River.
January 7, 2004	Letter from NMFS indicating that preliminary thermal modeling results for the accelerated construction schedule (nine years) are acceptable.
July 12, 2004	Letter sent to NMFS requesting reopening of informal Section 7 consultation.
Feb. 11, 2005	NMFS provides supplemental Biological Opinion

The following changes were made in the design. A bypass channel replaced channel widening in Reach 7 and floodwalls in Reach 8. Areas of upstream widening were changed to the same side of the channel as in the Authorized Project in nearly all locations. Benches were raised to six to eight feet above the channel invert to reduce SRA impacts. In addition, revised hydraulic information resulted in further modification of the Valley View Plan to include major additional length of river channel widening to maintain a 50-year level of protection under this plan. This has increased the impacts and mitigation needed for this alternative from those previously discussed, though the impacts and mitigation needed are still less that those required for the Authorized Project.

Due to these changes, the new NED plan (hereafter called the *Revised Valley View Plan*) now would have larger riparian forest habitat impacts than the original Valley View Plan. While it seems counter-intuitive that a plan with smaller habitat impacts (in terms of acres) would be less environmentally acceptable than a plan with larger losses, several things need to be considered. First, the 1998 Valley View Plan would remove riparian forest right down to the edge of the river in all impact locations due to its three-foot bench height. This would cause a greater *intensity* of aquatic habitat impact per linear distance of SRA cover impact. NMFS was very concerned about loss of low-bank habitat features such as undercut banks; the 1998 Valley View Plan would cause the loss of over two and one half times as much undercut bank as in the Authorized Project. Undercut bank losses for the Revised Valley View Plan would be similar to those for the Authorized Project.

Second, the impact locations for the 1998 Valley View Plan were not selected to avoid areas of *high-quality riparian forest* and *SRA cover*, but actually removed many such areas that would be avoided by the Revised Valley View Plan and the Authorized Project. Thus, impacts to habitat values are disproportionate relative to acres and linear feet of habitat impacted. This is reflected in the higher riparian forest compensation ratio determined by the HEP for the 1998 Valley View Plan.

Third, habitat losses and mitigation needs for the 1998 Valley View Plan have now been determined to be substantially underestimated due to updated hydraulic and soils information, as discussed below in Section 4.2. Thus, a direct comparison of these plans' impacts is misleading.

3.7 Geomorphic Considerations for the Authorized Project

Starting in 2001, several regulatory agencies expressed interest in replacing the bypass channels in the Authorized Project with a floodplain design for reaches 6 through 8. This was proposed for several reasons. First, it was felt that a floodplain would provide better environmental values in the long term, including terrestrial habitat, instream habitat, and water quality. Second, it was felt that the more natural geomorphic functioning under this sort of design would provide better channel stability. This interest in a floodplain (widening) plan by regulatory agencies was in contrast to their previous support for a bypass plan as a way of avoiding impacts on most riparian forest habitat in these reaches.

These issues were addressed in the Guadalupe Watershed Integration Working Group (GWIWG), an interagency forum for coordination on matters regarding the Guadalupe

River watershed. A number of possible alternatives and modifications were examined by GWIWG including floodplains of various heights, floodplains with berms, bypasses with connections to the main channel, as well as modifications to the main channel (such as grade control structures, biotechnical improvements, and bank modifications) while retaining the bypass. Goals of these modifications included improving bank stability and reducing bed incision, increasing residence time of sediment and nutrients in the system, increasing channel and riparian habitat, utilizing available right-of-way as a more natural flood bench instead of an armored bypass channel, and decreasing required maintenance. In considering these alternatives, GWIWG examined a number of issues associated with these measures and alternatives including thermal impacts of vegetation removal, soil conditions at depth in relation to mitigation plantings, hydraulic limitations on mitigation plantings, erosion protection, and low-flow channel habitat conditions.

To identify the feasibility of a continuous east bank floodplain bench, site visits were conducted, additional field data were collected, and hydraulic capacity remodeled under different bench heights. The resulting hydraulic modeling demonstrated that a continuous floodplain bench with a 10- or 15-foot cut below the existing ground surface would not convey a 100-year flood flow unless the width of riparian forest mitigation plantings were reduced to an inadequate level. The SCVWD determined that the floodplain bench would likely need to be armored due to water velocities. These limitations on the establishment of riparian forest and armoring the floodplain bench were considered to be unacceptable constraints of the continuous east bank floodplain bench by GWIWG. Additional serious concerns that argued against a floodplain plan included thermal impacts affecting salmonids in the river and unfavorable soil conditions at depth for riparian forest.

To meet flood protection commitments to the residents of San Jose, begin implementation of early mitigation plantings, and secure federal funding for the Project, GWIWG agreed in 2003 that the Preferred Project Alternative as proposed should be recommended for approval, subject to certain further studies and potential design modifications before construction to enhance project benefits. This provision is now reflected in Condition 32 of the Section 401 water quality certification.

4.0 Habitat Impacts and Mitigation for the Alternatives

4.1 General. Habitat impacts and mitigation needs herein were derived from several sources. Impacts and mitigation for the 1998 Valley View Plan were obtained from the EIR/EIS supporting the authorizing document and the final Coordination Act report. Impacts and mitigation for the Authorized Project were obtained from the EIS supporting the regulatory decision. Impacts and mitigation for the Revised Valley View Plan were derived in the office from project plans, aerial photos, and vegetation maps, with application of compensation ratios from the FWS HEP studies for terrestrial and aquatic habitats. There are no breakpoints in on-site mitigation costs for either riparian forest or wetlands, so the 1998 incremental analysis was not redone.

4.2 Comparability Issues. This report compares habitat impacts and mitigation needs for the 1998 Valley View Plan, the Revised Valley View Plan, and the Authorized Project.

However, the numbers for the 1998 Valley View Plan are not strictly comparable to the numbers for the later plans. Once the 1998 plan was determined to not be implementable due to NMFS input, it was not developed further as new information became available. Thus, there are three problems in particular with the impact and mitigation numbers for the 1998 plan.

First, the design of the 1998 Valley View Plan was based on feasibility-level hydraulic data. Subsequent hydraulic refinements showed that additional lengths of channel widening would be needed to achieve a 50-year level of protection. This resulted in further modification of the Valley View Plan after its initial revision to reflect NMFS input. If the 1998 Valley View Plan were updated to reflect the same hydraulic data as the Revised Valley View Plan, substantial additional channel widening and riparian forest/SRA cover loss would be required in the ecologically-important reach 9 and at other locations. For example, approximately 3 acres of additional riparian forest and 1,700 feet of SRA cover could be removed in reach 9 alone. Thus, the impact numbers for the 1998 Valley View Plan substantially understate the habitat impacts and needed mitigation for this plan since it was never revised to reflect the refined data.

Second, the mitigation plan for the 1998 Valley View Plan was prepared prior to adequate knowledge of the subsurface conditions in reach 7. Geotechnical borings along the river conducted in the PED phase of the study have revealed deep layers of dense, plastic clay at depths which would be exposed by excavation of the low bench in reach 7 under this plan. Riparian forest trees native to the western U.S. require relatively coarse soils for suitable growth and can not grow well in dense clay, if at all. Vigorous regrowth of riparian forest trees in the proposed mitigation areas would be essential for onsite mitigation of habitat impacts and thermal impacts, but these trees either would not survive or would not do well under the new site conditions. Replacement of soil in mitigation areas on this bench to allow growth and survival of these trees would be difficult. This would require excavating several feet of the existing heavy clay soil and replacing it with easily-erodible coarse soil suitable for riparian forest growth, in a zone with expected water velocities of up to 7½ feet per second.

Thus, it is unlikely that riparian forest mitigation plantings would grow properly on this bench. This means that 3.4 acres of riparian forest mitigation and 3,700 linear feet of SRA cover mitigation in reach 7 of the 1998 Valley View Plan would probably not be feasible due to soil conditions. Alternate sites for this mitigation have not been determined, but on-site mitigation in this reach would not be feasible. Additional real estate in reach 12 (not included in either version of the Valley View Plan) would be required and might be adequate to cover this particular mitigation deficit, at least in terms of riparian forest impacts. Failure to mitigate SRA losses in this reach would create significant negative permanent impacts on water temperatures, to the detriment of the steelhead trout. Based on previous coordination with NMFS, this would not be acceptable.

Finally, the mitigation plan for this alternative does not address the issue of temporary thermal impacts, which were not quantified in the feasibility study. Based on subsequent modeling by the SCVWD of a fluvial geomorphic plan for reach 7, the 1998 Valley View Plan would probably have unacceptable thermal impacts unless additional steps were taken to reduce temporary shade losses or provide artificial shade. No effort has been made to develop these measures or their costs since NMFS has already indicated that this alternative is inherently unacceptable. Long-term mitigation of the thermal impacts of this plan in reach 7 through replanting of impact sites would not be possible due to adverse soil conditions as noted above.

4.3 Riparian Forest and SRA Cover Impacts and Mitigation

The 1997 riparian forest HEP used separate sets of sample plots and separate sets of proposed mitigation planting types for evaluation of riparian forest impacts under the original version of the Valley View Plan and the Authorized Project, due to significant differences between the characteristics of impacted areas as well as the types of mitigation plantings proposed under each plan. However, the Revised Valley View Plan closely parallels the Authorized Project in the biological characteristics of affected habitat and the types and locations of riparian forest mitigation plantings. For this reason, a new HEP was not done as the compensation ratio used for the Authorized Project can reasonably be applied to the Revised Valley View Plan. Impact acreages for the Revised Valley View Plan have been quantified and the riparian forest compensation ratio for the Authorized Project applied to determine riparian forest mitigation needs. For the same reason, the aquatic habitat HEP for the Authorized Project was used for analyzing the impacts of the Revised Valley View Plan.

The Authorized Project would have larger initial impacts on riparian forest than the Revised Valley View Plan due to the greater amount of channel modification required. Riparian forest losses would be 10.46 acres with the Authorized Project and 8.04 acres with the Revised Valley View Plan. Both plans would greatly reduce the linear fragmentation of riparian forest in the study area due to extensive riparian forest mitigation plantings that would connect many existing patches of riparian forest over time. Note that the habitat impact and mitigation numbers in the EIS supporting the regulatory decision are different than those shown here due to the larger study area and additional non-Federal project features in that document. Table 4 shows comparative impacts on riparian forest habitat and shaded riverine aquatic cover under the two current plans and the 1998 Valley View Plan.

Determination of the correct amount of Authorized Project mitigation eligible for cost-sharing (if that plan were to be cost-shared) requires consideration of several factors. First, 3.23 acres of mitigation planned for non-Federal reaches must be excluded unless required to mitigate impacts in Federal reaches, which it is not. Next, mitigation in Federal reaches for losses in non-Federal reaches should also be excluded, though this is not an issue for riparian forest since all such losses are mitigated outside of the Federal project. In addition, 2.26 acres of mitigation intended by the SCVWD for a mitigation bank must be excluded. This number is based on the 2:1 compensation ratio from the EIS supporting the regulatory decision that was used for determining riparian forest mitigation needs. Finally, any remaining mitigation beyond that required by the habitat evaluation procedures (HEP) study by the U.S. Fish and Wildlife Service (FWS) study needs to be incrementally justified. This was done in the feasibility study, and the continuing absence of cost breakpoints for mitigation located on project lands means this finding is still valid. An additional 0.31 acres of riparian forest mitigation qualifies for cost-sharing on this basis, beyond that indicated as necessary by the HEP.

Table 4: Comparison of Riparian Forest and SRA Cover Impacts by Alternative

Impact, mitigation, or habitat attribute	*Alternative*		
	Authorized Project	**1998 Valley View Plan**	**Rev. Valley View Plan**
Riparian forest loss (acres)	10.46	6.50[1]	8.04
Riparian forest mitigation required or cost-effective (acres)[2]	20.61	12.10[1]	14.23
Riparian forest mitigation cost-shared (acres)	20.92	12.10[1]	14.23
Net riparian forest gain after mitigation (acres)	10.46	5.60[1]	6.21
Loss of overwater vegetation (feet) [3](SRA)	4,731	4,034[1]	4,601
Net increase in overwater vegetation (feet) after mitigation	8,462	7,350[1]	9,017
Reduction in total gap length, riparian forest	43%	35%[1]	42%
Reduction in number of gaps in riparian forest	17%	9%[1]	26%

[1] As noted in the text, these numbers substantially understate impacts and mitigation needs, and the bench mitigation in Reach 7 (3.37 acres) may not be implementable due to site conditions.

[2] Mitigation requirements for the Authorized Project were updated using impact numbers from the regulatory EIS together with the compensation ratio from the HEP.

[3] This is one measurement of SRA cover, but does not measure all SRA attributes. SRA impacts would be qualitatively worse under the 1998 Valley View plan due to the low bench height.

Table 5 shows the basis for determining cost-sharing of riparian forest mitigation in the Authorized Project, for the purpose of determining project costs for the NED calculation. Table 6 shows mitigation eligible for cost-sharing, by reach for both alternatives. Table 7 qualitatively compares the plans' environmental impacts.

All three plans would have significant impacts on SRA cover but were designed to provide extensive mitigation via riparian forest plantings. As mentioned in Section 4.2 above, the 1998 Valley View Plan would need to be modified to provide protection against a 50-year flood event, so its mitigation numbers are no longer accurate. In addition, a portion of the mitigation plantings for this plan likely would not be implementable as explained in that section. Mitigation plantings under the Revised Valley View Plan and the Authorized Project would increase SRA cover substantially in the long term.

The Authorized Project has been designed to minimize losses of SRA cover to the extent practicable, and the same is true of the Revised Valley View Plan in almost all locations. Mitigation areas have been located to the maximum extent feasible where they will increase SRA cover. Temporary losses of SRA cover have potential to raise water temperatures enough to harm salmonids, and this issue is discussed below in Section 4.6. Maximization of SRA cover is an important mitigation measure for thermal impacts.

Table 5: Determination of Allowable Riparian Forest Mitigation Cost-Sharing, Authorized Project (for purposes of the NED calculation only)

Mitigation Set	Acres
SCVWD LPP mitigation, Reaches 7-12	23.18
Impacts in Reaches 7-12, corrected	10.46
Mitigation eligible for cost-sharing	20.92
Excess mitigation (mitigation bank)	2.26
SCVWD planned mitigation, Reach 12	6.70
Cost-shared mitigation, Reach 12*	4.44

*This would only be cost-shared if the LPP is cost-shared

Table 6: Riparian Forest Mitigation by Reach

Reach	*1998 Valley View Plan**	*Revised Valley View Plan*	*Authorized Project*
7	3.97	3.23	3.23
8	0.00	0.13	0.13
9	0.24	3.21	1.81
10	1.55	4.06	6.00
11	1.70	3.62	5.31
12	0.00	0.00	4.44
Total	12.10	14.25	20.92

*As noted in the text, these numbers substantially understate mitigation needs, and the bench mitigation in Reach 7 (3.37 acres) may not be implementable due to site conditions.

4.4 Urban Forest

Landscaping trees in residential areas provide some habitat value for songbirds. This habitat type is called *urban forest* in the EIR/EIS. Its loss is mitigated by planting of oak-sycamore riparian forest on surplus non-economic parcels at the top of the east bank in reaches 7, 8, and 9, and by plantings on the upper east bank of reach 10B. Total mitigation acreage would be 4.14 acres under both the Authorized Project and the Revised Valley View Plan. There would be no urban forest impacts or mitigation under the 1998 Valley View Plan.

4.5 Wetland and Aquatic Habitat Impacts and Mitigation

The Authorized Project would require 0.52 acres of new wetland to replace lost wetlands in the Federal portion of the project. This would be created in a new percolation pond located on project lands, whose primary purpose would be compensating for loss of other percolation capacity due to channel widening in Reach 12 infringing on percolation ponds. The SCVWD plan actually calls for 2.65 acres of wetland mitigation at this site, but some of the excess would be mitigation for impacts of non-federal portions of the project while the rest would be a mitigation bank. Therefore, the excess mitigation can not be cost-shared.

Table 7: Qualitative Comparison of Environmental Considerations Affected by the Alternative Plans

Issue	**Alternative**		
	Bypass Channel	**1998 Valley View**	**Revised Valley View**
Is the plan implementable?	yes	no	yes
Does the plan reduce habitat fragmentation?	greatly	no	moderately
Does the plan contribute towards the long-term recovery of salmonids?	moderately	no	somewhat
Does the plan minimize low-bank SRA impacts?	yes	no	yes
Does the plan increase riparian forest acreage in the long term?	greatly	minimally	moderately

The 1998 Valley View Plan as originally designed would have caused loss of 0.28 acres of wetland. Wetland mitigation would be on the low benches, unlike with the other plans. This figure is no longer accurate due to revised hydraulic information as explained in Section 4.2; revision of this plan to provide a 50-year level of protection would cause greater impacts to wetlands.

The Revised Valley View Plan would require 0.43 acres of wetland mitigation. This would be located in the river channel between stations 207 50 and 211 50, just below Capital Expressway. This section of channel would be widened to increase its capacity, with a lowered trapezoidal inner channel that should be able to support wetland vegetation across the entire width of the channel. However, if designs for this plan were carried to completion, fish passage would need to be provided though this wetland area. Also, riparian plantings on both banks are planned; they would provide some shade but not at an optimal level for temperature considerations in this short reach due to the wide low-flow channel. However, there are no reasonable alternatives for locating wetland mitigation on other project lands under this alternative.

All three plans would have significant temporary impacts to other waters of the U.S., but these impacts would be mitigated at each impact site by restoration of the impact sites upon completion of construction. The one exception is reach 10b, where mitigation would be in the same reach but not necessarily at the same location due to relocation of the low-flow channel for mitigation purposes. Impacts to wetlands, other waters of the U.S., and SRA cover are shown in Table 8.

4.6 Thermal Impacts and Construction Sequencing Considerations

Under either alternative, the upper Guadalupe River flood control project would have temporary negative effects on habitat conditions for both the chinook salmon and the steelhead trout due to temporary removal of SRA cover from some locations. This would be due both to loss of habitat features and increased water temperatures. The extent to which these impacts could harm these fish depends in part on the temporal severity of the impacts. Even if long-term habitat conditions are improved, short-term impacts that are sufficiently severe could eliminate these fish species from the river, regardless of any long-term habitat improvement that may occur later. Alternately, if such impacts greatly reduce the size of these local populations, they could lose much of their genetic diversity, thereby increasing their risk of eventual extinction.

Table 8: Comparison of Wetland and Aquatic Impacts
(in acres)

Plan	*Wetlands*	*Other Waters of the U.S.*	*All Waters of the U.S.*
1998 Valley View Plan	0.28[1]	2.64[1]	2.92[1,2]
Rev. Valley View Plan	0.43	5.96	6.39[2]
Authorized Project	0.52	7.48	8.00[2]

[1]These numbers substantially understate impacts and mitigation needs
[2]Nearly all impacts to waters of the U.S. are temporary

A lengthy, phased construction period would substantially reduce the severity of short-term impacts, as growth of streamside trees in mitigation areas could improve habitat conditions and lower water temperatures in some areas before other areas temporarily lose shade and other habitat features during later phases of construction. Conversely, the faster construction occurs, the worse the short-term impacts would be.

The initial Biological Opinion (BO) for this project was obtained through formal Section 7 consultation conducted by the San Francisco District Regulatory Branch, and only on the version of the Authorized Project described in the EIS in support of the regulatory decision, since NMFS refused to consult on more than one alternative. This EIS specified a 25-year construction period for the project due to concerns at that time over the availability and quantity of both federal and local funding for this project. Consultation was further delayed for temperature modeling of this plan's impacts, which was not completed until well after the final EIS supporting the authorizing document was completed in January 1998. Formal Section 7 consultation itself was not completed until April 18, 2000.

Initial modeling of the thermal impacts of this plan was conducted by Jones and Stokes Associates, Inc. under contract to the SCVWD. This modeling used a 25-year construction period as an assumption, and determined that with that lengthy construction period, and with some mitigation being installed early in this period, water temperatures would remain acceptable and would eventually decrease from current levels. The final Feasibility Report (January 1998) used a three-year construction period in its analysis of the alternatives, as temperature modeling had not been completed and we did not yet have input from NMFS regarding different construction timetables.

Once it was known that a short construction schedule would have unacceptable thermal impacts, it was apparent that formal consultation would have to be reopened during the

PED phase of the study. This could only be done once major uncertainties over the magnitude of federal and local funding were resolved and a construction timetable consistent with updated financial constraints could be specified, after which thermal modeling could be conducted to quantify thermal impacts of different construction schedules.

Starting in 2003 Jones and Stokes Associates (JSA), under contract to the Corps, updated the thermal model to reflect new information including revised tree growth rates and project area tree growth in recent years. They then modeled the Authorized Project under an accelerated schedule with nine years between the start of new mitigation plantings and the last removal of aquatic shade (this initial schedule included an additional two years of construction that did not involve shade losses or gains).

Three graphs from this modeling are included here to show important findings. Figure 1 shows simulated water temperatures in March (a critical steelhead migration month) after project construction but before major regrowth of mitigation, and Figure 2 shows water temperatures after mitigation is complete. Figure 3 shows total monthly habitat suitability units for steelhead trout prior to, during, and after construction and mitigation. Overall, the modeling results show acceptable thermal impacts for a nine-year construction schedule. NMFS has agreed with this determination as discussed in Section 5.0 below. This modeling shows that thermal impacts would stay within the impact envelope of the EIR/EIS in support of the regulatory decision under this construction schedule.

5.0 Environmental Compliance

The revision of the Valley View Plan was done to ensure that the plan would be compliant with the Endangered Species Act if it were implemented. It was revised into a downsized version of the Authorized Project, so that impacts would be similar to those of the Authorized Project but smaller. This approach also would make the Revised Valley View Plan compliant with other relevant laws if it were to be implemented, subject to procedural requirements (e.g. Section 7 consultation, etc.) which would only be followed if the plan were to be actually proposed for implementation. However, procedural requirements such as Section 401 water quality certification (Clean Water Act), Section 106 consultation (National Historic Preservation Act), and Section 7 consultation (ESA) have been followed for the Authorized Project, and the success of these procedural actions strongly suggests that the Revised Valley View Plan, an alternative with similar but lesser impacts, would be implementable. Table 9 shows the status of environmental compliance efforts for this project.

Two sets of Environmental Impact Statements were prepared and circulated for this project. One set was prepared in support of the feasibility report, with the final EIS being released in August 1998 and the Record of Decision (ROD) being signed on June 1, 1999. The second set of EIS documents was prepared for the non-Federal sponsor's Section 404 permit, due to uncertainty over eventual Federal funding and this sponsor's plans to construct additional work outside of the feasibility study boundaries. While preparation of the EIS supporting the regulatory decision began early in the feasibility study, the final regulatory EIS was not released until 2000 and the ROD was not signed until January 2004 after water quality certification under the Clean Water Act was granted.

Between the release of the final feasibility study EIS and the final EIS supporting the regulatory decision, modest changes were made to the Authorized Project in several reaches, resulting in about 1.4 additional acres of riparian forest impact within the federal project area. These changes in the project and its impacts were not reflected in the feasibility study EIS but were disclosed in the EIS supporting the regulatory decision.

Another change in the project was in its construction period. The EIS supporting the feasibility study indicated that the Authorized Project would be constructed in three years, while the EIS supporting the regulatory decision indicated that it would be constructed in 25 years. The currently-proposed nine-year construction schedule was bracketed by the proposed construction periods in these two NEPA documents. Thermal modeling (see Section 4.7) has verified that temporary impacts to water temperatures under the nine-year schedule would be acceptable. The National Marine Fisheries Service has concurred with this determination in a letter dated January 7, 2004 and in the supplemental BO discussed below in this section.

To update NEPA compliance, an Environmental Assessment (EA) was circulated from December 22, 2004 to January 21, 2005. This EA adopted the EIS in support of the regulatory decision for purposes of Corps construction of the project, due to the changes in the design of the Authorized Project after completion of the previous EIS. This EA also included the revised alternatives and construction schedule, and discussed their impacts and other updated project information. After the close of the public comment period, the EA was finalized with responses to public comments and a signed Finding of No Significant Impact (FONSI). The SCVWD will issue its own separate document to update its compliance with the California Environmental Quality Act.

In 2004, the Corps requested that the FWS prepare a Planning Aid Report (PAR) to cover changes in both alternatives since the final CAR in 1998. This report was completed in December 2004. The conclusions of the report were that the revised plans "...reasonably minimize impacts and maximize opportunities for on-site mitigation." The FWS also noted that there are still some unresolved technical issues regarding such things as changes in the baseline conditions and quantitative assessment of changed habitat impacts under the revised plans. Resolution of these issues is not expected to significantly affect project costs. When the minor design refinements arising from the requirements of the water quality certification have been finalized, the Coordination Act Report will be updated to reflect all changes to the project.

Ongoing coordination with the resource agencies through the GWIWG regarding this project and its impacts indicates that the agencies still support the Authorized Project subject to the requirements of the water quality certification. The one exception is the Guadalupe-Coyote Resource Conservation District, which opposes construction of bypass channels, primarily on geomorphic grounds.

Table 9: Environmental Compliance

Statute	*Status*
National Environmental Policy Act	Record of Decision for the civil works EIS signed June 1999; ROD for regulatory EIS signed Jan. 2004. EA circulated in Dec. 2004 to update the alternatives and other information, and to incorporate the regulatory EIS into civil works NEPA compliance for this project. FONSI signed Feb. 2005.
Endangered Species Act	Formal Section 7 consultation completed. Supplemental Biological Opinion completed on February 11, 2005.
Clean Water Act	Section 401 certification completed December 2003. Section 404(b)(1) equivalency determination for Authorized Project is in the EIR/EIS. Section 404(b)(1) equivalency supplement for Revised Valley View Plan in Section 6.0 of this appendix.
Clean Air Act	EIS determined that the Authorized Project would conform with the most recent State Implementation Plan. The State of California has requested documentation of projected emissions numbers prior to concurrence with the conformity determination; these will be recalculated and submitted upon receipt of additional funding.
National Historic Preservation Act	Feasibility-level cultural resources coordination completed. Revised Valley View Plan footprint is entirely within footprint of feasibility study alternatives. A treatment plan and MOA will be prepared prior to construction.
Fish and Wildlife Coordination Act	Final Coordination Act Report (CAR) submitted August 1998 and provides adequate information for assessment of mitigation needs for Revised Valley View Plan and updated Authorized Project. Planning Aid Report submitted December 2004 regarding modifications of the NED plan and the Authorized Project.

The San Francisco Regional Water Quality Control Board (RWQCB) approved certification under Section 401 of the Clean Water Act on December 3, 2003, for construction of the project by the Corps and by the SCVWD. This certification contains 41 provisions which must be fulfilled. Due to the large number of provisions, many of which are routine procedural requirements such as preparation of a storm water pollution prevention plan and a spill prevention and response plan, only the more significant ones are listed in Table 10. Included are a number of studies to provide additional information to determine if minor project modifications would be appropriate and to provide for better management of the Guadalupe River.

The EIR/EIS in support of the authorizing document included a Section 404(b)(1) evaluation for the Authorized Project and the 1998 Valley View Plan, and the EIR/EIS in support of the regulatory decision also evaluated the Authorized Project under Section 404(b)(1). The latter evaluation is supplemented in Section 6.0 in this report to cover the Revised Valley View Plan.

Table 10: Major Water Quality Certification Requirements

Preparation and implementation of plans for impact avoidance and rectification such as the storm water pollution prevention plan
Construction limited to June 1 to October 31 unless advance approval received
Safe stockpiling of excavated material
Characterization of material to be excavated using standard protocols
Proper disposal of excavated material
Diversion of flows around construction sites
Investigation and corrective measures if fish harmed
Monitoring and reporting requirements
Revision of mitigation plan if mitigation success does not meet criteria
Sediment supply and transport study
Profile and cross-section surveys to determine erosion and aggradation trends
Riparian planting soil suitability study
Project design modification study
Gravel augmentation study
Study temperature impacts from reaches upstream from the project
Bank armoring study- feasibility of biotechnical erosion control

The National Marine Fisheries Service prepared a BO dated April 18, 2000, including tentative conservation recommendations for essential fish habitat (EFH) under the Magnuson-Stevens Fishery Conservation and Management Act. The terms and conditions of the BO, as updated in 2005, are listed in Table 11. NMFS endorsed the planned nine-year construction schedule for the Authorized Project in a letter dated January 7, 2004. The Corps sent a letter dated July 12, 2004 requesting additional informal consultation on the Authorized Project under the new construction schedule. Subsequently, NMFS indicated that there had been sufficient changes in the Authorized Project to justify reopening of formal consultation under Section 7 of the Endangered Species Act. NMFS released a supplemental BO on February 11, 2005 affirming the nine-year construction schedule and modifying the terms and conditions of the 2000 BO.

Any other compliance issues arising from changes in the Authorized Project or from new regulatory or legal requirements will be addressed if they arise.

Table 11: Reasonable and Prudent Measures, and Terms and Conditions, in the Biological Assessment and Supplement

Reasonable and prudent measures	Associated Terms and Conditions
1. Avoid and minimize instream construction impacts to the Guadalupe River ecosystem	Isolate each workspace from flowing water.
	Maintain a corridor for unimpeded passage of steelhead during construction
	Use existing points of ingress and egress, or work from top of bank, where practicable.
	Limit in-stream construction to period of April 15-October 15, with limitations before June 1.

	Ensure that construction in Ross and Canoas Creeks does not contribute sediment or turbidity to the Guadalupe River.
	Educate workers about the value of steelhead trout and their habitat.
2. Minimize temporary and permanent changes to instream and riparian habitat and ensure mitigation success	Photo documentation prior to and after construction, and compilation of these photos into a reference library.
	Fully mitigate riparian forest and SRA cover losses on a 1:1 basis.
	Prepare mitigation and monitoring plan for NMFS review and approval.
	Implement a vegetation protection plan.
	Mitigation areas will not be affected by construction and will be protected in perpetuity.
3. Monitor construction and relocate steelhead using a fisheries biologist	Retain fisheries biologist with appropriate expertise; biologist will monitor construction including temporary diversions.
	Fisheries biologist will capture and relocate steelhead trout to avoid impacts from construction.
	Monitor construction to avoid and rectify harmful conditions.
	Immediate notification of NMFS in case of steelhead injury or mortality.
4. Implement measures to control sediment, turbidity, and pollutants resulting from construction	Use erosion control and sediment detention devices.
	Prepare and implement a Storm Water Pollution Prevention Plan.
	Prepare, implement a Toxic Material Control and Spill Response Plan.
	Water from site shall be removed from the site or placed in a settling basin prior to it being returned to the river.
	All materials used for construction shall be non-toxic.

Table 11: Reasonable and Prudent Measures, and Terms and Conditions, in the Biological Assessment (continued)

5. Prepare and submit annual monitoring reports	Provide written monitoring report within 30 days of completion of each construction season.
	Provide written reports regarding mitigation activities on the schedule indicated in the Mitigation and Monitoring Plan.
	Provide written reports on the results of the Vegetation Protection Plan on the schedule indicated in the plan.
	Submit all reports and plans to the appropriate NMFS official.
6. Ensure design modifications for project enhance natural stream functions, benefit anadromous salmonid habitat.	The Corps and SCVWD shall submit the reach-specific plans for the Design Improvement Modifications (as described in the Project's Water Quality Certification) at the 65 percent design level to NMFS for review and approval prior to initiation of construction.
	These plans shall be submitted to NMFS at the address provided in the BO for review and approval.
7. Ensure fish passage improvement projects	The Corps and SCVWD shall submit the design plans for each fish passage improvement project to NMFS for review and approval prior to initiation of construction.

ment projects properly designed for adult and juvenile steelhead migration.	These plans shall be submitted to NMFS at the address provided in the BO for review and approval.
8. Ensure flood bypasses are properly functioning and monitor for fish stranding.	The Corps and SCVWD shall perform visual surveys in each flood bypass channel during the first and second winter following construction. Surveys for stranded fish and isolated pools shall be performed immediately after flood waters have receded from the bypass channel.
	The results of these surveys in the flood bypasses shall be submitted no later that June 1 of each year to NMFS.

6.0 Section 404(b)(1) Evaluation Supplement

6.1 Introduction

The Section 404(b)(1) evaluation in the EIS supporting the regulatory decision evaluates the effects of the Authorized Project and its compliance with Section 401 of the Clean Water Act and applicable regulations. For Corps projects, an equivalent evaluation is performed although a permit is not required.

This section evaluates the updated NED Plan under the Section 401(b)(1) guidelines. The updated NED plan is similar to the Authorized Project in its design, differing primarily in reduced scale and length of channel modifications and the omission of Reach 12. Therefore, the Section 404(b)(1) evaluation in the EIS supporting the regulatory decision is incorporated by reference, as amended below.

6.2 Analysis

The updated NED plan is described in the text of the Limited Re-evaluation Report and that description is incorporated by reference. Impacts of this plan on aquatic resources have been determined and are displayed in Table 8.

The updated NED plan is a version of the In-Stream Channel Modifications Alternative described in the EIS supporting the regulatory decision and thus passes the first stage screening evaluation. The second screening analysis was done based on the project purpose, provision of protection against the one percent flood, which has been determined by Congress in their authorization of the LPP for construction. In this evaluation, the updated NED drops out because it does not meet the project purpose. The Authorized Project remains as the least environmentally-damaging practicable alternative as discussed in the Section 404(b)(1) analysis in the final EIS supporting the regulatory decision.

7.0 Coordination and Public Comments

7.1 Coordination

The 1998 Valley View Plan and the Authorized Project were fully coordinated with the public through the NEPA/CEQA process during the feasibility study. No agency interest in the 1998 Valley View Plan was noted, except for the evaluation by the FWS in their CAR. The updated Authorized Project and the Revised Valley View Plan were coordinated with the regulatory agencies through the GWIWG. No comments were received except from the Guadalupe-Coyote Resource Conservation District (GCRCD) late in the process. These plans were then coordinated with the public and the regulatory agencies via the EA, during the period December 22, 2004 through January 21, 2005. Ongoing coordination will be continued through the GWIWG process.

7.2 Public Comments on the Environmental Assessment

Three comment letters were received, from the GCRCD, Pacific Gas and Electric (PG&E), and a private citizen. Substantive comments and responses are provided in the EA and will be briefly summarized here.

The GCRCD opposes bypass channels and believes that they will worsen the condition of the river in the long term. Their comments asserted that geomorphic alternatives to a bypass channel had never been fairly examined during or after the feasibility study. The GCRCD also asserted that the Corps hydrology greatly overstates the size of the 1% flood. They also oppose any granting of advance mitigation credit for vegetation regrowth in Reach 12 or elsewhere.

PG&E expressed concern over possible impacts on their facilities and requested that we coordinate with them. The private citizen agreed with the conclusion of the Section 410(b)1 determination. No other agencies or private organizations commented.

8.0 Conclusion

The Valley View Plan, selected as the NED plan in the feasibility report, has been substantially revised to be acceptable to the National Marine Fisheries Service in response to delayed input from that agency. The unacceptability of the 1998 Valley View Plan and criteria for making this plan acceptable were indicated in a letter from NMFS in April 2000. These criteria were followed in revising this plan. In addition, updated hydraulic and geotechnical information indicate that the impacts and mitigation needs for the 1998 Valley View Plan were substantially underestimated and that the mitigation plan probably would not be implementable in the reach with the greatest habitat impacts. The Revised Valley View Plan addresses and resolves all these issues using the NMFS criteria, and is essentially a scaled-down version of the Authorized Project.

The Authorized Project and the Revised Valley View Plan would have substantial impacts on sensitive habitats, but they have been designed to largely minimize these impacts given the degree of channel modification needed to pass large flows without creating flooding. Habitat impacts would be mitigated, resulting in a long-term increase in valuable habitats in the project area. The Authorized Project would have somewhat larger impacts and mitigation needs than the Revised Valley View Plan. Recent thermal modeling indicates that the Authorized Project can be built in 9 years rather than 25 years while having acceptable thermal impacts on sensitive species.

The Revised Valley View Plan and changes to the Authorized Project have been coordinated with the public and the regulatory agencies through circulation of an EA as well as through the GWIWG process. The USFWS has prepared a Planning Aid Report to cover these changes in the alternatives. Formal Section 7 consultation to cover changes in the Authorized Project has been satisfactorily concluded.

8.0 Figures

See LRR Enclosure E5 for the following figures.

Figure 1: Average Hourly Water Temperatures for March of the Dry/Median Year, Postproject

Figure 2: Average Hourly Water Temperatures for March of the Dry/Median Year, Postmitigation

Figure 3: Total Monthly Thermal Suitability Units for Steelhead Smolts Simulated with Dry/Median Conditions for the Accelerated LPP

9.0 Attachments

Attachment1 : Correspondence

See LRR Enclosure E4 for actual letters. Below is a listing of dates and description of each letter of relevant Correspondence.

September 4, 1996 letter to NMFS from the Environmental Planning Section requesting a Section 7 conference on the steelhead trout

June 5, 1997 letter to NMFS with biological assessment from the Environmental Planning Section requesting formal consultation for the steelhead trout

July 21, 1997 letter from NMFS denying request for formal consultation

November 17, 1997 letter from NMFS commenting on the Corps feasibility study draft EIR/EIS.

December 23, 1997 letter to NMFS responding to the November 17 NMFS letter and requesting formal consultation for the LPP.

March 1, 2000 letter to NMFS regarding the acceptability of the Valley View Plan.

April 5, 2000 letter from NMFS stating that the Valley View Plan would not be acceptable

January 12, 2001 letter to NMFS from the Regulatory Branch listing conservation measures to be implemented under the Magnuson-Stevens Fishery Conservation and Management Act

August 20, 2003 letter from NMFS indicating that offsite mitigation would not be acceptable for impacts to steelhead trout in the Guadalupe River

January 7, 2004 letter from NMFS indicating that the preliminary thermal modeling results for the accelerated construction schedule (9 years) are acceptable to NMFS

Attachment 2: NEPA Compliance

See Enclosure E6 for Environmental Assessment and Finding of No Significant Impact, dated February 2005

Attachment 3: Biological Opinions

April 18, 2000 Biological Opinion, NMFS, See Enclosure E8

February 11, 2005 Supplemental Biological Opinion, NMFS, See Enclosure E9

Attachment 4: Section 401 Water Quality Certification

See Enclosure E10

UPPER GUADALUPE RIVER PROJECT
LIMITED REEVALUATION REPORT

T2: HYDROLOGY AND HYDRAULICS APPENDIX

NOTE: All plates referenced in this Appendix can be found in the *Technical Appendices, Upper Guadalupe River Feasibility Study, January 1998.*

1.0 Problems and Opportunities

1.1 Flooding Problems

The threat of significant flooding is a water resource related problem identified in the study area. Recorded or known flooding from the Guadalupe River dates back to the early 1800's. Newspaper accounts described notable floods which occurred in 1862, 1895, 1911 and 1917, but streamflow data has only been compiled since 1930.

Impacts due to flooding have intensified since World War II as the valley's land use changed from agricultural to residential and industrial. Fourteen floods have occurred since World War II. Flooding in 1955 was the worst recorded in history, inundating 8,300 acres in the Guadalupe River drainage basin and causing $18 million in damages (19XX dollars).

The study area has been flooded on six occasions in the 15-year period before completion of the feasibility study from 1980 to 1995. The Guadalupe River overtopped its banks upstream of Alma Avenue during floods in February 1980, March 1982, January 1983, February 1986, January 1995, and March 1995. Canoas and Ross Creeks have also overtopped their banks in the last 15 years.

In 1982, flooding spread to about 15 acres that included the areas bounded by the Elks Lodge on Alma Street, West Virginia Street, the Southern Pacific Railroad and McLellan Avenue. The Elks Lodge reportedly had about one foot of water inside, while the Alma Street and Willow Street under crossings, beneath the Southern Pacific railroad bridges, experienced about ten feet of flooding. The March 1982 flooding caused damage to twenty homes and five businesses, which totaled approximately $410,000 (1982 dollars).

In January 1983, the Guadalupe River flooded between Union Pacific Railroad and West Virginia Street and inundated about 60 acres. The peak flow recorded was 8,400 cfs at Almaden Expressway, approximately a 17-year flood event. The Governor of California issued a State of Emergency Declaration for Santa Clara County, which was followed by a Declaration of Major Disaster for Public Assistance by the President of the United States. The January 1983 event was the most severe during the 1980s.

In January 1995, the Guadalupe River overtopped its banks from a point 500 feet upstream of the Southern Pacific railroad tracks at the border of the Elks Lodge parking lot to Interstate 280 (see Plate 17). Flooding also occurred near the confluence with Los

Gatos Creek. Ross Creek and Canoas Creek also overtopped their banks and flooded residential areas.

Later the same year in March the Guadalupe River overtopped its banks between Interstate 280 and Willow Glen Way. There was 2 to 3 feet of flooding in the Elks Lodge and flood waters entered several homes and commercial buildings (see Plate 18).

High floods have also caused extensive erosion damage, sediment deposition and debris accumulation. One retaining wall also failed along Old Almaden Road as a result of flooding in the 1980s.

Previous channel modifications and erosion protection activities have extensively altered the river channel within the study area. In the late nineteenth century, the section between Willow Street and Willow Glen Way was realigned to reduce flood damages. The confluence of Canoas Creek and Guadalupe River was moved upstream from its original location (near Auzerias Avenue in downtown San Jose) to its present location upstream of Curtner Avenue. Gravel excavation operations resulted in channel widening between Branham Lane and Blossom Hill Road. Construction of the Almaden Expressway resulted in realignment and widening along a 3,000-foot section of the channel, upstream of Curtner Avenue. Bridge crossings, erosion protection features and the adjacent development have also modified other channel areas.

2.0 Drainage Basin

2.1 Regional Drainage System

The two principal drainage systems for central and western Santa Clara Valley are Guadalupe River and Coyote Creek. Elevations in the Guadalupe River basin ranges from sea level at the San Francisco Bay to about to over 3,000 feet above mean sea level. A summary of elevation ranges is provided in Table 1.

TABLE 1. ELEVATION RANGES & DRAINAGE DISTRIBUTION

Elevation Range (feet, MSL)	Drainage Area* (square miles)	Percent of Total Area
0-500	177	34
500-1,000	72	14
1,000-2,000	165	32
2,000-3,000	100	19
over 3,000	6	1
TOTAL	520	100

* Drainage areas- Guadalupe at mouth: 160 square miles Coyote: 360 square miles

2.2 Guadalupe River Basin

The Guadalupe River watershed is bounded on the south and southwest by the east side of the Santa Cruz Mountains, on the west by the San Tomas and Saratoga Creeks basin, on the north by the San Francisco Bay and on the east by the Coyote Creek basin. The Guadalupe River is the second largest stream in Santa Clara County discharging into the South San Francisco Bay, draining an area of approximately 170 square miles.

The Guadalupe River corridor passes through a region of the valley that is predominantly residential and commercial. The river flows from south to north for approximately 20 miles before emptying into San Francisco Bay at Alviso Slough. Its upstream terminus is located one-quarter mile south of Blossom Hill Road, at the confluence of Guadalupe Creek and Alamitos Creek. The upstream 5-1/2 miles of the reach comprises the study area. The remaining downstream reaches of the river bisect the redeveloped downtown business district of San Jose and traverse an industrial and publicly zoned area the San Jose International Airport before emptying into Alviso Slough (The Corps of Engineers previously conducted a study of the downtown reaches, as reported in 1985).

2.3 Description of Major Tributaries

The Guadalupe River has five major tributaries as indicated by Table 2 below.

TABLE 2. MAJOR TRIBUTARIES TO THE GUADALUPE RIVER

Tributary	Drainage Area (square miles)
Los Gatos Creek	52
Guadalupe Creek	13
Alamitos Creek	38
Canoas Creek	19
Ross Creek	10

All tributaries, except for Los Gatos Creek, contribute flows to the upper Guadalupe River reach. Ross Creek merges with the river near Branham Lane. Canoas Creek joins the river near Curtner Avenue. Guadalupe Creek and Alamitos Creek merge with the Guadalupe River near Coleman Road.

2.4 Local Drainage

The city of San Jose is responsible for addressing local drainage problems through construction of curbs, gutters, inlets and storm drains. The local drainage system collects surface runoff and directs it into the nearby river channel and major tributary creeks.

3.0 Existing Water Resources Development Facilities

Santa Clara County has extensive water resources development, including small and large reservoirs for recreation, irrigation, water supply and conservation. The Santa Clara Valley Water District (SCVWD) has constructed dams and reservoirs since 1933, and now operates ten facilities, which are listed along with their storage capacity in Table 3 below. Elsman reservoir is owned and operated by the San Jose Water company. Three of the reservoirs are located upstream of the study area on tributaries to the Guadalupe River: Calero Reservoir, Guadalupe Reservoir and Almaden Reservoir. The reservoirs do not serve a flood control purpose, but do provide incidental flood control.

TABLE 3. SANTA CLARA COUNTY RESERVOIRS CAPACITIES

Reservoir	Storage Capacity (acre-ft)
Almaden	1,780
Anderson	91,280
Calero	10,160
Chesbro	8,086
Coyote	23,700
Elsman	6,200
Guadalupe	3,740
Lexington	20,210
Stevens Creek	3,600
Uvas	10,000
Vasona	410

Numerous flood control structural measures have been or are being constructed on the Guadalupe River. Although the river downstream of Hwy 101 was improved by SCVWD to provide 100 year protection it no longer does due to maintenance issues. The Lower Guadalupe River Project by SCVWD has the purpose of raising levees to restore the 100 year level of protection. The original SCVWD project set the water surface elevation at I-880 which became the basis for the starting condition of the Sacramento District project through the downstream reach. Improvements between Hwy 101 and I-880 are needed to maintain the original project water surface elevation at I-880 so as not to impact the SPK project upstream of I-880.

On March 30, 1992, the SCVWD and the Corps of Engineers Sacramento District Office signed a local cooperation agreement to implement the downtown Guadalupe River Flood Control Project. The project consists of channel modifications between

Interstate 880 and Interstate 280 (immediately downstream of the current study area) and includes recreation features. The project is expected to be constructed at a total cost of $138 million. The SCVWD, the San Jose Redevelopment Agency and the State of California will share approximately $78 million of the total cost, as co-sponsors of the project. Construction began in late September 1992, and is scheduled for completion in fall 1998.

The SCVWD is undertaking two local flood control projects within the study area, independently and without Federal contribution. The first local project is a bypass channel adjacent to the east bank of the Guadalupe River alignment from Interstate 280 to Willow Street. The bypass channel would tie into the downtown Guadalupe River project at Interstate 280. The downtown Guadalupe River project is currently (2003) under construction. In 1997, flood control planning studies will also begin for a second local project, along the Canoas Creek tributary.

4.0 Climate

San Jose's climate is typical of the San Francisco Bay area. Summers are dry and warm, while winters are mild and moderately wet. Differential heating between the sea breezes and interior valleys dominate the summer weather. Storms from the north Pacific influence the winter weather, producing virtually all the rainfall in the area.

Extreme temperatures range from a minimum in the 20s to a maximum of over 100 degrees Fahrenheit. An average low temperature of 49 degrees occurs in January, while an average high temperature of 81 degrees occurs in July. The sea breezes and topography of the area influence prevailing wind direction. Winds come most frequently from the northwest. The surrounding mountains provide shelter to the area which results in wind velocities that are generally lower than in other areas surrounding the San Francisco Bay.

4.1 Precipitation

Precipitation data is collected from numerous stations within the study area. Data from the Los Gatos, San Jose and Santa Clara University stations were used to develop the distribution of monthly average precipitation in the basin. The periods of record for the three stations are 92, 103, and 95 years respectively.

Normal annual precipitation (NAP) varies from 14 inches near the San Francisco Bay to 50 inches near the crest of the Santa Cruz Mountains. The normal annual precipitation in the Guadalupe River basin is 26 inches. Table 5 tabulates the distribution of monthly average precipitation. Ninety percent of the rainfall occurs during the winter, in the six-month period of November through April. January is normally the wettest month.

TABLE 5. MONTHLY AVERAGE PRECIPITATION

Month	Monthly Rainfall Percent of NAP	Month	Monthly Rainfall Percent of NAP
Jan	21.1	Jul	0.1
Feb	16.5	Aug	0.2
Mar	14.0	Sep	0.9
Apr	8.7	Oct	4.7
May	2.4	Nov	11.9
Jun	0.4	Dec	19.1

4.2 Runoff

Runoff varies significantly and has been highly modified by storage and diversion facilities. Natural average annual runoff was estimated to be 35,500 acre-feet, from gaging station records on the Guadalupe River in San Jose for the period of 1931 to 1960. The record shows precipitation ranging from zero in 1931 to over 123,000 acre-feet in 1938, which is believed to be wettest year of record. Monthly average runoff is shown in table 6.

TABLE 6. MONTHLY AVERAGE RUNOFF GUADALUPE RIVER @ SAN JOSE

Month	Monthly Runoff*	Month	Monthly Runoff*
Jan	19.8	Jul	0
Feb	32.6	Aug	0
Mar	20.5	Sep	0
Apr	10.9	Oct	0
May	0.3	Nov	1.0
Jun	0	Dec	14.9

* Percent of average annual runoff.

4.3 Flow-Frequency Relationships

The District's 1977 Hydrologic Engineering Office Report for the upper Guadalupe River basin serves as the basis for flow-frequency relationships for this study. Results contained in the Hydrologic Engineering Report were confirmed by the Sacramento District Office in the General Design Memorandum of December 1991 for the downtown Guadalupe River project. The report is available at the District's office. Channel design discharges and their frequencies are shown on page 12 in section 7.7 of this report.

5.0 Previous Hydrologic Studies

The 1977 Corps of Engineers Hydrologic Engineering Report serves as the basis for this feasibility study. The report includes discharge versus frequency relationships and the Standard Project Flood discharge for the Guadalupe River, Coyote Creek and Ross Creek basins. The Sacramento District also adopted the hydrologic study findings for the downtown Guadalupe River project, which is currently under construction.

A second hydrologic engineering office report (published in December 1991 and revised in April 1992) develops hydrology for the Canoas Creek basin and assesses factors which could cause the upper Guadalupe River basin hydrology to change. The conclusion from this report was that any expected basin changes would have minimal effect on the Canoas Creek basin hydrology. Specifically, the study investigated peak discharges for expected future conditions on Canoas Creek; updated spillway discharge versus frequency relationships for upstream reservoirs to reflect the flow conditions subsequent to earlier San Francisco District and Sacramento District study findings; and impacts on downstream discharges due to operational changes of Calero Reservoir (resulting from the importation of water from San Luis Reservoir).

SUMMARY OF HYDRAULICS

6.0 Description of Existing Floodplains

Under existing conditions, the 20-year discharge will overtop both the east and the west banks of the Guadalupe river at various locations from Interstate 280 to Willow Glen Way. Also Ross Creek and Canoas Creek overtop their banks during the 20-year flood event and flow into the Guadalupe River floodplain. Plate 1 delineates the extent of the 20-year floodplain.

The 50-year flood will overtop both the east and west banks of the Guadalupe River at various locations from Interstate 280 to Willow Glen Way. The 50-year flood will overtop the east bank of the Guadalupe River upstream of Branham Lane resulting in street flooding. Flooding will also overtop the banks of Ross and Canoas Creeks. Plate 2 delineates the extent of the 50-year floodplain. The 100-year and 500-year floodplains are similar in shape to the 50-year floodplain with greater floodplain depths and areas. Plates 3 and 4 delineate the 100- and 500-year floodplains.

7.0 Design Considerations

7.1 Existing Conditions

Under current conditions the Guadalupe River's flow capacity within the study area varies from as little as a 6-year event to as much as a 100-year event. Existing bridges would safely (i.e. flows unobstructed by their low cords) allow the passage of similar flows (7- to 100-year flows).

The preceding statements are based on Corps', not FEMA, criteria and assume that the local sponsor has completed construction of proposed improvements (to a 100-year level) from Interstate 280 to Willow Street. Tables 7 and 8 below list the flow capacity for the numerous river reaches and bridges in the study area. See Plate 5 for reach locations.

TABLE 7. EXISTING CAPACITIES BY REACH

Reach	Capacity (cfs)	Exceedance Interval (Years)
7	6,000	6.5
8	8,000	15
9	12,000	60
10	11,000	48[1] 55[2]
11	10,000	55[3] 60[4]
12	9,400	60
Ross Creek	930	5.5
Canoas Creek	1,900	9

[1] Downstream of Canoas Creek

[2] Upstream of Canoas Creek

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[3] Downstream of Ross Creek

[4] Upstream of Ross Cree

TABLE 8. EXISTING CAPACITIES BY BRIDGE

Bridge	Capacity (cfs)	Exceedance Interval (Years)
Virginia Street	10,000	33
SPRR bridge	11,458	50
Willow Street	6,420	7-8
Alma Street	6,300	7-8
UPRR	11,300	50
Willow Glen Way	11,630	53
Malone Road	12,000	55
Curtner Ave	11,340	50
S. Almaden Exprwy- Canoas	10,000	33
N. Almaden Exprwy	21,000	100
Pearl Avenue	12,400	100
Capitol Exprwy	8,200	33
Branham Lane	7,200	25

7.2 Manning's "n" Values

For existing conditions the natural channel roughness was estimated to have a Manning's "n" value of 0.045 for its entire length. The selected "n" value was input into the existing conditions HEC-2 model, which produced water surface elevations, channel capacities and overtopping discharges which compared well with historical events. Changing the channel "n" value from reach to reach would not appreciably change the calculated floodplains.

7.3 Topographic Data

Topographic data used for floodplain analysis was obtained from aerial photographic maps (1-inch = 200 feet scale) with 2-foot contours and spot elevations.

These maps are based on aerial surveys of the floodplain conducted in November 1990 by Aero-Geodetic Corporation.

7.4 Guadalupe River Floodplains

Floodplains under current condition were developed for the 20-, 50-, 100- and 500-year flood events. They are shown on Plates 1,2,3 and 4. The current floodplains are based on the following methodology/criteria:

1. Overtopping discharges at low capacity channel cross-sections were calculated for the existing channel conditions using the HEC-2 split flow option, and were then routed through the floodplain for each flood event.

2. Floodplain depths are based on normal depth calculations. Normal depth calculations included Manning's "n" values of 0.02 to 0.10.

3. Normal depth cross-sections extend across the entire floodplain width where flood flows can move without excessive interference. The cross-sections were developed from the 1" = 200' scale topographic maps.

4. Normal depth cross-sections are limited to streets parallel to the direction of flow when flood flows are blocked by homes, buildings and fences, etc. Normal depths calculated for street flow are then extended across the floodplain.

5. Ponding was assumed in low areas.

6. Flood flows that overtop the Guadalupe River at most low capacity locations flow away from the river before continuing downstream through the floodplain.

7. Overbank flood flows will continue downstream to highway 280. At Highway 280 flooding will re-enter Guadalupe River, flow over Highway 280 under Highway 280 a bridges.

7.5 Low Capacity Channel sections

The existing upper Guadalupe River channel has relatively low capacity at specific locations. The locations, discharges and frequencies associated with the low-capacity areas are listed below (see Plate 19 for economic areas).

TABLE 9. SUMMARY OF LOW CAPACITY CROSS-SECTIONS USED FOR ECONOMICS AND RISK ANALYSIS

Economic Area	Station	Discharge (cfs)	Frequency (years)
1	746+00	6,000	6.5
2	Ross Creek	930	5.5
3	777+00	6,100	7
4	Canoas Creek	1,900	9
5	961+00	8,000	37

7.6 Design Limitations

Mitigation - The Guadalupe River channel contains a valuable riparian corridor; therefore, steps will be taken to minimize impacts. Design methods used to minimize impacts to the riparian corridor include limiting channel excavation to one bank for any reach when possible. With the Willow Glen and Valley View plans, the channel cross-sections will be excavated so that there is a bench 3-10 feet above the low flow channel invert, floodwalls will be used along channel reaches where interior drainage is not a problem. With the Bypass Channel Plan, a bypass channel will be constructed to run parallel to the existing channel so that parts of the riparian corridor remain completely untouched.

The above channel configuration will minimize impacts to the riparian habitat as well as maintain the efficiency of the sediment transport capability of the existing channel. The channel cross-sections will be designed with a high Manning's "n" (up to 0.070) so that riparian habitat removed during construction will be allowed to re-establish in the river channel. All plans will require the replacement or the modification of several bridges.

Real Estate - Real estate for both project construction and mitigation is very expensive; therefore, real estate acquisition must be minimized. Real estate restrictions will require the construction of steep banks and extensive bank protection in some areas.

Plans Studied - The NED analysis is based on the evaluation of the Willow Glen, Valley View, and Bypass Channel designs. Each plan was designed to contain its respective level of protections with one foot of uncertainty in the design water surface elevation. Discharges are based on the results obtained in the Hydrologic Engineering Office Report, Guadalupe River and Coyote Creek, Santa Clara County, California, June 1977.

7.7 Channel Design Discharges

The channel design flows tabulated below are based on future hydrologic conditions (the year 2010). Detailed hydrology is available in the Hydrologic Engineering Office Report for the Guadalupe River and Coyote Creek, Santa Clara County, California, June 1977.

Table 10. Channel Design Discharges Guadalupe River, San Jose, California

Location/Event	Drainage Area sq mi	20-yr	50-yr	100-yr	500-yr
Guadalupe River downstream of Canoas Creek	81	9,000	11,200	14,600	21,800
Guadalupe River downstream of Ross Creek	63	7,300	9,700	12,400	19,000
Guadalupe River downstream of Blossom Hill Road	53	6,300	9,100	11,400	17,800
Canoas Creek at Guadalupe River	18	2,500	3,000	3,300	3,600
Ross Creek at Guadalupe River	10	1,550	1,950	2,350	3,100

7.8 Manning's "n" Values for Project Conditions

A composite "n" value for the channel cross-section was computed based on the table of roughness values shown below.

TABLE 10. CHANNEL ROUGHNESS FACTORS

Type of Cover	Manning's n - value
Representative open channel cross-section (combination of cover types - composite "n" value)	0.055 - 0.062
Box culvert	0.025
Rip-rap-lined channel slope	0.035
Grass or gravel-lined bench	0.030
Instream riparian habitat	0.110

Natural channel bottom	0.040
Gabions and Cribwalls	0.04 - .05

7.9 Bank and Channel Protection Criteria

Riprap requirements for calculated velocities are presented below in Table 12.

TABLE 12. BANK PROTECTION CRITERIA

Velocity	Method
2 - 8 ft/sec	Vegetation
8 – 15+	Riprap, Concrete, Cribwalls, Gabions

An example of a high velocity location that will require riprap protection include the channel upstream and downstream from Willow Glen Way and the upstream end of the Reach 8 bypass channel. Average velocities 500 feet upstream and downstream from Willow Glen Way range from 10 ft/sec to 20 ft/sec. In Reach 8 velocities exceed 8 ft/sec from the weir to a point 400 feet downstream. See Table xx for more riprap location details.

7.10 Channel Side Slopes

Channel side slopes of 1V:2H for the most part are stable. Side slopes steeper than 1V:2H will require cribwalls, gabions or other reinforcement to remain stable.

7.11 Willow Glen Way Bypass Weir

ERDC was contracted to construct and test a model of the proposed bypass weir downstream from Willow Glen Way. The weir was designed to begin diverting flows over 1,500 cfs (1.5 year event). At the 100-year design flow design flow of 14,600 cfs the existing natural channel will contain 5,000 cfs and the bypass channel will contain 9,600 cfs. The weir will be 128 feet long with a crest elevation of 110.25 feet NAVD 1988.

7.12 Starting Water Elevations

Reach 7 begins at the CALTRAIN bridge at Station 740+00.

TABLE 13. STARTING WATER SURFACE ELEVATIONS

Event	Starting WSEL
10	95.6
20	96.6
50	97.7
100	103.2

7.13 Freeboard Requirements

Freeboard above the 100-year water surface elevation is used as the current project safety factor. The local sponsor is concerned that a project designed to risk analysis standards (90% probability of containing a 100-year event) would deliver discharges above the current flood control design to the project downstream from Highway 280. Therefore the Upper Guadalupe River Project will use the same freeboard requirements as the downtown project.

TABLE 14. FREEBOARD REQUIREMENTS

Project Feature	Freeboard (ft)
Levees	3.0
Floodwalls	1.0
Channel below grade	1.0
Culverts	1.0
Bridges	1.0

7.14 Culvert Design Criteria

Guadalupe River – Culverts installed on the Guadalupe River will be designed with a minimum of one foot of freeboard.

Ross and Canoas Creek – Culverts on Ross and Canoas Creeks will operate as pressure flow culverts during design flood events. The culvert inverts for the two creeks will be set above the Guadalupe River invert at their confluence so that sediment maintenance inside the culverts will be minimized.

8.0 Plans of Improvement

Three plans of improvement were evaluated: the Willow Glen Plan, Valley View plan and Bypass Channel plan. These plans feature floodwalls, channel widening, a channel bypass and bridge modifications/replacement as means to alter the upper Guadalupe River from Interstate 280 upstream to Blossom Hill Road, a distance of about 5.5 miles. Improvements on Ross Creek will be constructed from Guadalupe River to Jarvis Avenue. For all designs (Willow Glen, Valley View, and Bypass Channel) it is assumed that a project with a 20-year level of protection will be constructed on Canoas Creek.

8.1 Willow Glen Plan

Following construction of this plan the upper Guadalupe River would contain up to a 20-year discharge, or 9,000 cfs downstream of Canoas Creek. Channel widening will be limited to one bank of the river to preserve the existing riparian habitat. Above Canoas Creek the Guadalupe River has a natural level of protection of 37- to 60-years. Ross Creek would contain up to a 20-year discharge from the Guadalupe River to Jarvis Avenue. A plan view is shown on Plate 6. For discussion purposes the study reach is separated into subreaches and described accordingly.

Interstate 280 to SPRR: The local sponsor would construct a 2,500-foot long bypass channel parallel to the river on the east side. The bypass would be trapezoidal in shape and lined with riprap. The combined capacity of the bypass and existing river channel would equal a 100-year discharge of 14,600 cfs.

SPRR to State Highway 87: This portion of the project will join the local sponsor's improvements at the SPRR bridge. Channel improvements will include widening the channel to create a channel width of 110 feet, 3 feet above the channel invert (See Plate 8, 50-year level of protection as a reference). Side slopes would be 1V on 1.5H where possible with bank protection as needed. Channel roughness would reflect a composite Manning's "n" on the order of 0.062.

State Highway 87 to UPRR Bridge: Improvements for this project section will include a channel width of 80 feet, 3 feet above the channel invert (See Plate 8, 50-year level of protection as a reference), and a floodwall 2-4 feet high on the east bank between the Alma street and UPRR bridges. The Alma Street bridge and the Willow Street bridge will require modifications or replacement. The design composite Manning's "n" value is 0.062.

UPRR Bridge to Willow Glen Way: End of work on Guadalupe River improvements for this project section will include floodwalls on both banks 1 to 3 feet high and improvements to the UPRR bridge. The design composite Manning's "n" value is 0.045.

Willow Glen Way to Blossom Hill Road: The Guadalupe River channel and bridge openings have at least 20-year capacity from Willow Glen Way to Blossom Hill Road. The assumed composite Manning's "n" value for this section is 0.045.

8.1.1 Canoas Creek

Flooding on Canoas Creek results from two different mechanisms; the runoff contribution from Canoas Creek's watershed and backwater flows from the Guadalupe River. The backwater effects are limited to the lower reach of Canoas Creek. To address the runoff contribution would require an extensive study and may require improvements on the same order of magnitude as the main stem, the SCVWD indicated that they intend to manage the peak runoff flows from the Canoas Creek watershed through local measures. Thus, for plan formulation purposes, improvements to Canoas Creek were limited to backwater effects.

Flooding is a recurrent problem in the downstream reach of Canoas Creek. The downstream portion of the creek has a capacity limited to approximately a 9-year event. It is estimated that the capacity of the upstream portion of the creek is limited to flows associated with an approximate 20-year event. Conditions on Canoas Creek were based on the Corps' December 1991 (revised April 1992) Hydrologic Engineering Office Report, Upper Guadalupe River Basin, Santa Clara County, California.

All improvements to alleviate backwater flooding were designed to also contain flows associated with a 20-year event or less from Canoas Creek. Thus, each of the plans described include identical improvements to Canoas Creek. These include the replacement of culverts beneath Almaden Expressway and Nightingale Drive and low floodwalls along both banks of the creek. It was assumed that any additional improvements undertaken to increase the capacity of Canoas Creek beyond an approximate 20-year capacity would be undertaken as a local project.

For the purposes of sizing improvements on the main stem Guadalupe River, it was assumed that the main stem channel directly downstream of the confluence with Canoas Creek would accommodate flows associated with any event from Canoas Creek. This assumption was made to be consistent with the SCVWD's intention to manage peak runoff on Canoas Creek through local measures. Note that because peak flows on Canoas and the main stem are not coincident, the additional peak flows from Canoas are incidental when compared with flows in the main channel.

8.1.2 Ross Creek

To provide a 20-year level of protection on Ross Creek the following improvements will be made. The bottom width will be excavated to 25 feet with 1V:1H side slopes. Floodwalls will be built from Almaden Expressway to a point 300 feet upstream of Cherry Avenue. Interior drainage requirements for the floodwall have not been calculated for the Willow Glen Plan since it is very unlikely to ever be selected as the NED plan. An additional 12' W x 10 'H 210'-long culvert will be added at Almaden Expressway. At Jarvis Avenue a 12'W x 9.5'H culvert will be installed in addition to the existing 12'W x 9.5'H culvert.

8.2 Valley View Plan

The Valley View plan features channel widening on Guadalupe River and Ross Creek, bridge replacement and modification, and floodwalls designed to contain the 50-year discharge. Channel widening will be limited to one bank in most cases to preserve the existing riparian habitat. A plan view of the Valley View plan is shown on Plate 7; typical cross-sections are shown on Plates 8-12. The plan is described below.

Interstate 280 to SPRR: The local sponsor will build a bypass channel parallel to the existing Guadalupe River channel. The combined capacity of the existing river channel and the bypass channel will be equal to a 100-year level of protection.

SPRR to 500' upstream of Willow Street: Improvements to this project section will include an 18'-deep bypass channel with an 85'-wide floodway and 1:1 side slopes.

500' upstream of Willow Street to Alma Street: Improvements to this project section will consist of a combined natural and bypass channel. 18'-deep bypass with 30'-wide floodway and 1:1 side slopes; the surface elevation of the embankment between the bypass and natural channel would allow transfer of floodwaters between the two alignments during high flows.

Alma Street to UPRR Bridge: A gabion lined bypass channel will be built through the existing Elks Lodge parking lot.

UPRR Bridge to Willow Glen Way: 18'-deep bypass with 65-70'-wide channel floodway with 1:1 side slopes.

Willow Glen Way to Curtner Avenue: Improvements for this project section include channel excavation starting 1,500 feet upstream of Willow Glen Way and ending 1,000 feet upstream from Malone Avenue. The channel width bank to bank will be 65-75 feet 3-6 above the channel invert. The design composite Manning's "n" value is 0.045.

Curtner Avenue to Almaden Expressway (southbound): Improvements for this project section will include excavation with a bank to bank width of 65-75 feet, 3 feet above the channel invert (this configuration will provide a low flow channel and a bench 3 feet above the channel invert). The design composite Manning's "n" value is 0.045.

Almaden Expressway (southbound) to 400 feet downstream of Foxworthy Avenue: This section of the Guadalupe River and the bridge openings within it have at least a 50-year capacity. The design composite Manning's "n" value is 0.045.

400 feet downstream of Foxworthy Avenue to Capitol Expressway: Improvements for this project section will include a channel with bank to bank width of 85 feet, 3 feet above the channel invert (See Plate 8, 50-year level of protection as a reference). The Hillsdale Avenue bridge will be replaced. The design composite Manning's "n" value is 0.045.

Capitol Expressway to Carrie Lee Way: This section of the Guadalupe River and the bridge openings within it have at least a 50-year capacity. The design composite Manning's "n" value is 0.045.

Carrie Lee Way to Branham Lane: Improvements for this project section will include a channel with bank to bank width of 85 feet, 3 feet above the channel invert (See

Plate 8, 50-year level of protection as a reference). The design composite Manning's "n" value is 0.045.

Branham Lane to Blossom Hill Road: This section of the Guadalupe River and the bridge openings within it have at least a 50-year capacity. The design composite Manning's "n" value is 0.040.

8.2.1 Ross Creek

Improvements to Ross Creek will include new culverts and channel widening. The excavated channel bottom width will be 27 feet from Almaden Expressway to a point 750 feet upstream of Jarvis Avenue. An additional 12'W x 10'H x 210'-long box culvert will be installed next to the existing 10H x 12W x 210'-long culvert at Almaden Expressway. At Jarvis Avenue a 12'W x 9.5'H culvert will be installed in addition to the existing 12' W x 9.5'H culvert. Intermittent floodwalls will be built from Almaden Expressway to a point 300 feet upstream of Cherry Avenue, and between Jarvis Avenue to a point 600 feet upstream of Jarvis.

8.2.2 Canoas Creek

Canoas Creek will be improved by replacing the culverts beneath Almaden Expressway and Nightingale Drive and providing low floodwalls along both banks of the creek.

8.3 Bypass Channel Plan

The Bypass Channel plan features a bypass channel, channel widening, levee and floodwalls designed to contain the 100-year discharge on the upper Guadalupe River and Ross Creek. Channel widening will be limited to one bank in most cases to preserve the existing riparian habitat. A plan view of the Bypass Channel Plan is shown on Plate 13. The plan is described below.

Interstate 280 to 500' upstream of Willow Street: Improvements to this project section will include an 18'-deep bypass channel with an 85'-wide floodway and 1:1 side slopes.

500' upstream of Willow Street to Alma Street: Improvements to this project section will consist of a combined natural and bypass channel. 18'-deep bypass with 30'-wide floodway and 1:1 side slopes; the surface elevation of the embankment between the bypass and natural channel would allow transfer of floodwaters between the two alignments during high flows.

Alma Street to UPRR Bridge: A gabion lined bypass channel will be built through the existing Elks Lodge parking lot.

UPRR Bridge to Willow Glen Way: 18'-deep bypass with 85'-wide channel floodway with 1:1 side slopes.

Willow Glen Way to Blossom Hill Road: Improvements to this project section will include channel widening. The bank to bank width of the project will range from 75 feet to 200 feet, 4-10 feet above the invert (See Plate 8, 50-year level of protection as a reference).

8.3.1 Canoas Creek

Canoas Creek improvements will be limited to the channel reach from its mouth at Guadalupe River to Nightingale Drive. Floodwalls from 1 to 3 feet high on top of the existing levee will be designed to provide a 20-year level of protection (The local sponsor will construct a Canoas Creek project that will provide a 100-year level of protection at a later date). Box culverts at the Almaden Expressway and Nightingale Drive will be improved to provide a 100-year level of protection. One new 20’W X 12’H box culvert will be added to the two existing 10’WX12’H box culverts at Almaden Expressway and one new 9’W X 91/2’H box culvert will be added to the two existing 9’W X 91/2H box culverts at Nightingale Drive. Interior drainage facilities will be required for the floodplain surrounding Canoas Creek and will be designed for the final plan.

8.3.2 Ross Creek

Improvements to Ross Creek will include new culverts and channel widening. The channel bottom width be excavated to 35 feet from Almaden Expressway to a point 750 feet upstream of Jarvis Avenue. The existing 12'W x 9.5'H x 210'-long box culvert at Almaden Expressway will be replaced with a 20'W x 9.5'H x 210'-long culvert. At Jarvis Avenue a 12'W x 9.5'H culvert will be added to the existing 12'W x 9.5'H culvert. Intermittent floodwalls will be built from Almaden Expressway to a point 300 feet upstream of Cherry Avenue, and between Jarvis Avenue to a point 600 feet upstream of Jarvis. Interior drainage facilities will be required for the floodplain surrounding Ross Creek and will be designed for the final plan.

8.4 Interior Drainage Facilities

Proposed Corps flood control alternatives require floodwalls along some sections of Ross Creek between Almaden Expressway and Jarvis Avenue and an increase in levee elevations between Almaden Expressway and Nightingale Avenue on Canoas Creek.

The area adjacent to Ross Creek bounded by Almaden Expressway and Cherry Avenue in the vicinity of Briarglen Court and Montmorency Drive is subject to possible induced flooding under the Valley View Plan project conditions (existing conditions floodplain elevations for the 50-year event are 170 feet NGVD versus 171 feet NGVD for both the Valley View and Bypass plan project conditions).

The floodplain to the south of Canoas Creek is currently subject to flooding during low frequency events caused by inadequate interior drainage facilities. Under existing conditions water surface elevations on Redbird Avenue are estimated to be 144 feet NGVD during the 100-year event and up to 145 feet NGVD under Valley View and Bypass Project conditions.

Ross Creek – At this level of design interior drainage facilities will be limited to 4 – 2'x4' culverts approximately 75 feet long placed at existing culvert alignments. If future studies determine the need for additional facilities, pumps or additional culverts will be designed.

Canoas Creek - Interior drainage facilities will be designed to reduce or a least not increase residual floodplain elevations. At this level of design interior drainage facilities will be limited to 2 – 2'x4' culverts approximately 75 feet long placed at existing culvert alignments. If future studies determine the need for additional facilities, pumps or additional culverts will be designed.

Table 15

Summary of Bypass Plan Project Features

Reach	Channel	Bridges/Culverts	Levees	n value	Bank Protection
6	To be built by the local sponsor	N\A	N\A	N\A	N\A
7 STA 740+00 STA 782+00	- SPRR end to Willow Street - independent bypass channel 85 foot bottom width. - Willow Street to Alma Street – combined (same cross-section) natural and bypass channels. - Alma Street to UPRR Bridge – independent bypass channel 60 foot bottom width - Excavated side slopes 1V:1H	SPRR Bridge add 4- 20'w X 14'h Replace - Willow and Alma Street Bridges.	None	Natural channel .045 -.05 Bypass .035	Bypass channel bottom 4,200 ft riprap 4,200 feet Gabions east side slope. Natural channel 500' riprap west side
8 STA 782+00 STA 795+00	UPRR to Willow Glen Way - natural channel with an independent bypass channel with a 85' bottom width. A 128' entrance weir to the bypass channel will be constructed immediately downstream from Willow Glen Way. Bypass side slopes 1V:1H.	Replace Bridges at UPRR and Willow Glen Way.	None	Natural channel .05 Bypass .035	Bypass channel bottom 1,300 ft riprap 1,300 feet gabions on side slopes. Natural channel vortex weirs and riprap bank protection Willow Glen Way to a point 400' downstream.

9 STA 795+00 STA 843+00	Willow Glen Way to Curtner Avenue – mostly east bank channel excavation 65' – 85' wide 3-5 feet above the channel invert. Some west bank excavation near Malone Avenue. East bank excavation 6V:1H. Excavation along entire reach.	Channel modifications at Malone Avenue. Replace Curtner Street Bridge.	None	Natural channel .05	Riprap banks and channel bottom from Willow Glen Way to a point 500' upstream. 1,100' riprap west bank. Crib walls east bank.
10A STA 843+00 STA 855+00	Curtner Street to Canoas Creek – east bank excavation 85' wide 3-5 feet above invert. East bank excavation 6V:1H. Excavation along entire reach.	No Change	None	Natural channel .05	Crib walls east bank.
10B STA 855+00 STA 889+00	Canoas Creek to Bershire – 2,000 feet of channel restoration.	No Change	West bank Flood wall 300' Levee 800'	Natural channel .05	Existing rock and gabions.
10C STA 889+00 STA 910+95	Berkshire to Capitol Expressway - east bank excavation 85 – 150 feet wide 5 – 7 feet above invert. Side slope excavation 1V:1H and 6V:1H. Excavation along entire reach.	No Change	None	Natural channel .05	Cribwalls and gabions east bank. Rock lining from Capitol expressway to a point 200 feet downstream.

11 STA 910+95 STA 960+00	Capital Expressway to Branham Lane - East bank 3,000 feet of excavation, 100-120 feet wide 5 feet above the invert. West bank 2,000 feet of excavation, 100-160 feet wide 5 feet above the invert. 500' bypass channel 50' bottom width. West bank excavation 6V:1H. East bank excavation 1V:1H.	No Change	None	Channel .04 - .05	Rock bottom bypass. Cribwalls excavated bank.
12 STA 960+00 STA 1034+00	Branham Lane to Blossom Hill Road – excavation is limited to that required to join Reach 11.	No Change	Levees both banks STA 985+00 to 998+00 East bank 998+00 to 1012+00	Channel .045 - .05	Existing Rock
Canoas Creek	Guadalupe River to Nightingale. Maintain existing slopes.	Add culverts 1-20x10 at Almaden 1-9.5x9 at Nightingale	Flood walls 1-5 feet high both banks	Channel .035	Existing channel bottom is concrete
Ross Creek	Guadalupe River to a point 600 feet upstream from Jarvis Avenue – excavate channel bottom width 35 feet. Side slopes 1V:1H	Add culverts 1- 20x9.5 at Almaden 1- 12x9 at Jarvis	Flood walls between Almaden and Cherry	Channel .03 - .035	5,000 feet of articulated mat lining.

9.0 Residual Flooding

Residual floodplain elevations have been calculated for the Valley View and Bypass Channel plans and have been input into HEC-FDA models for economic analysis.

For areas on the south side of Ross and Canoas Creeks residual floodplains have been adjusted to account for induced flooding caused by the increase in floodwall and levee elevations on Canoas and Ross Creeks. Therefore all economic damages will be accounted for when benefits are calculated.

Residual flooding for the Willow Glen Plan, Valley View and the locally preferred plans are shown on Plates 14, 15, and 16.

10.0 Sediment Study

A sediment study for the Guadalupe River was completed by Philip Williams and Associates in February 1996. Results from the HEC-6 models revealed the following:

- Under existing conditions the upper Guadalupe River appears to have a fairly stable sediment transport regime: at any location in the study area, under design flood conditions, reach-averaged deposition produced less than 1.0 foot of bed- elevation increase, and reach-averaged scour produced less than 2.0 feet of bed-elevation drop. The upstream reaches of the model reflected very little bed-elevation change, while the downstream reaches of the model reflected a slight scouring trend.

- The scouring trend observed in the lower reaches of the existing conditions model is indicative of the generally sediment-starved state of the river. The dams upstream of the study area and the increased amount of paved surface due to urbanization in the Guadalupe watershed have both reduced the natural runoff sediment load of the upper Guadalupe River.

- Under the Willow Glen and Valley View Plan conditions, the upper Guadalupe River reflects a slightly more stable sediment transport regime than under existing conditions: design flood conditions produced small reach-averaged bed-elevation changes in the upstream reaches of the study area and reach-averaged scour in the downstream reaches of the study area was reduced from existing condition - especially in the zones where the bypass channel operates. The Willow Glen and Valley View Plans yielded very similar results.

- Under Bypass Channel Plan conditions, the upper Guadalupe River reflected the most stable sediment transport regime modeled: the design flood conditions produced reach-averaged bed-elevation changes that were less than 1.0 feet at any given location in the study area.

- Long-term flow simulations of the upper Guadalupe River - where the effects of a 25-year flow record were modeled for each channel configuration - produced bed-elevation changes that were accentuated from those observed under design flood conditions. However, the locations of deposition and erosion remained very similar to those reflected in the design flood simulations.

- The deposition phenomenon expected to manifest downstream of the bypass diversion weirs was not observed in the Bypass Channel Plan model results, and was observed only on a very minor scale in the Willow Glen and Valley View Plan model results. This diminished deposition was due to the overall sediment-starved condition of the river. Scour downstream of the bypass junctions was also not as extraordinary as expected.

- Sensitivity analysis revealed that the magnitude of resulting bed-elevation changes were most sensitive to the type of sediment transport function and the values of Manning's "n" (as used in the models). However, sensitivity to these parameters was not particularly high, and therefore, the model results are quite reliable. Uncertainty in the magnitude of reach-averaged bed-elevation changes from model results is on the order of 1.5 feet. The location of scour and deposition zones in model results was not significantly sensitive to model parameters.

- Under any of the proposed flood-control alternatives, it appears that channel maintenance requirements would not significantly increase. In fact, less channel maintenance would perhaps be required since each flood-control alternative tends to subdue the patterns of scour and deposition that occur under Existing Conditions. However, it should be noted that the hypothesized patterns of extraordinary deposition and scour associated with the bypass channel junctions - those patterns that did not materialize in model results - could still occur, as HEC-6 is unable to model the complex local transport phenomena associated with bypass inlet and outlet structures. If these patterns of deposition and scour did occur around the bypass junctions, channel maintenance requirements could be significantly greater that under existing river conditions.

For details on the sediment transport study refer to the report "Sediment Transport Modeling Study of the Upper Guadalupe River, April 1996".

11.0 GUADALUPE RIVER RISK BASED ANALYSIS

11.1 Project Performance

The SCVWD has expressed concern that the Upper Guadalupe Project not convey more water than can be carried in the Downtown Project. Therefore the current hydraulic design for Guadalupe River uses the same freeboard criteria (Table 14) as the Downtown

Project to contain uncertainties in water surface elevations. Final project performance will be evaluated for both the Downtown project and the Upper Guadalupe Project. Final design project performance for the Upper Guadalupe project will match the Downtown Project performance. Table 16 below presents current Upper Guadalupe Project design performance as calculated by HEC-FDA.

Table 16
Upper Guadalupe River – Project Performance

Plan	Reach	Conditional Non-Exceedance Probability by Events					
		10%	4%	2%	1%	.4%	.2%
Existing Conditions	Reach 7- SPRR to UPRR	.72	.23	.12	.04	.011	.005
	Reach 8 – UPRR to Willow Glen Way	.88	.38	.21	.06	.02	.006
	Reach 9 – Willow Glen Way to Curtner Ave.	.98	.57	.30	.06	.009	.002
	Reach 10 – Curtner Ave. to Capitol Exprwy	.99	.99	.92	.66	.31	.21
	Reach 11 – Capitol Exprwy to Branham Lane	.99	.77	.52	.18	.05	.02
	Reach 12 - Branham Lane to Blossom Hill Rd	1.0	.95	.83	.45	.20	.10
Valley View Plan	Reach 7- SPRR to UPRR	1.0	.97	.91	.70	.46	.33
	Reach 8 – UPRR to Willow Glen Way	.99	.98	.95	.80	.55	.40
	Reach 9 – Willow Glen Way to Curtner Ave.	1.0	.98	.92	.60	.25	.11
	Reach 10 – Curtner Ave. to Capitol Exprwy	.99	.99	.95	.74	.39	.28
	Reach 11 – Capitol Exprwy to Branham Lane	1.0	.87	.67	.29	.11	.05
	Reach 12 - Branham Lane to Blossom Hill Rd	1.0	.98	.90	.56	.27	.14
Bypass Plan	Reach 7- SPRR to UPRR	1.0	.97	.91	.70	.46	.33
	Reach 8 – UPRR to Willow Glen Way	.99	.98	.95	.80	.55	.40
	Reach 9 – Willow Glen Way to Curtner Ave.	1.0	.99	.97	.78	.44	.25
	Reach 10 – Curtner Ave. to Capitol Exprwy	1.0	.99	.98	.88	.62	.52
	Reach 11 – Capitol Exprwy to Branham Lane	1.0	.99	.98	.83	.63	.50
	Reach 12 - Branham Lane to Blossom Hill Rd	1.0	1.0	.97	.80	.55	.40
Ross Creek		NA	NA	NA	NA	NA	NA
Canoas Creek		NA	NA	NA	NA	NA	NA

Project performance was evaluated for low capacity cross-sections in each design reach. At this time risk analysis has not been completed for bridges since they were not considered weak points in the project design. Additional risk analysis will be undertaken to evaluate bridge performance as the project proceeds to detailed design.

Under proposed project conditions riparian habitat development and maintenance will increase n value uncertainties above existing condition n value uncertainties. Therefore HEC-FDA project model water surface elevations will have greater uncertainties than for existing conditions.

11.2 Economic Analysis - Methods, Assumptions and Data

Risk analysis methods (HEC-FDA) were used to calculate economic damages.

1) The Guadalupe River floodplain is divided into 5 sub-areas, each with one or more flood source. Each of the 5 sub-areas has one flood source that is unique to that sub-area. The 5 sub-areas are shown on Plate 19.
2) Floodplain water surface elevations were calculated for existing and project conditions during discharge events.
3) Floodplain water surface elevations are based on a range of n values (see section 7.4).
4) Uncertainty in discharge and stage versus frequency curves were determined based on gaged data with a 25-30 year record length, depending upon which gage was used.
5) Project performance is calculated for existing and project conditions for river cross-sections. Floodplain performance is then calibrated to channel cross-section performance.

11.3 Calculation of Damages

Floodplain hydraulic data (11.2) is input into the economic model and damages are calculated. See the economics section of this report for performance tables.

T3: REAL ESTATE PLAN

INTRODUCTION

This report addresses the real estate requirements for the Limited Re-Evaluation Report (LRR), which is the post authorization change document for the proposed Upper Guadalupe River flood control project. This LRR is being prepared to address design changes to the NED plan that was presented in the Feasibility Report. The Feasibility Report was competed in 1998, which resulted in construction authorization in WRDA '99. This study identified an NED plan referred to as the Valley View Plan, which offered protection for a 50-year event and also identified an LPP, referred to as the Bypas Channel Plan, which would provide protection from a 100-year event and promote long-term recovery of anadromous fish such as the currently threatened steelhead trout. The design changes that the LRR addresses are a result of significant changes that greatly affect the NED that was authorized. The changes were due to the Central Coast Unit, which includes the Guadalupe River, that designated in 1999 critical habitat for Federally threatened steelhead trout and was declared an evolutionary significant unit under the Endangered Species Act. As a result, the Valley View Plan (NED) had to be revised to comply with Federal law regarding endangered species. This LRR re-examines the cost sharing for the LPP, Bypass Channel Plan, because the cost sharing was based on the Valley View Plan (NED) as described in the authorized 1998 Feasibility Study. This LRR addresses the cost sharing based on the revised NED.

Previous studies and authorizations are detailed in the main body of the report. A Real Estate Section was prepared for the Reconnaissance Report in November 1989, and a Real estate Plan was prepared and included in the Feasibility Repot prepared in 1998 and authorized in WRDA '99.

There are no Federally owned lands within the lands, easements, and rights-of-way required for this project.

The project's plan is to reduce damage to surrounding communities due to flooding from the Upper Guadalupe River and its tributaries, Canoas Creek and Ross Creek. A secondary plan in this project is to include recreation features in the LPP. It should be noted that there will be no additional lands required for the recreation features other than what is already required for the flood control project.

GENERAL DESCRIPTION OF THE PROJECT AREA

The project area is situated in an urban area of southwestern San Jose, in the extreme southern area of the Santa Clara Valley. Santa Clara Valley lies in the center of Santa Clara County in west central California, immediately south of San Francisco Bay. The County is bounded on the northeast by Alameda County, on the northwest by San Mateo County, and the southwest by Santa Cruz County. The area is highly urbanized. There are widespread residential subdivisions that are interspersed with commercial shopping centers, light industrial development, and some open spaces. The open spaces include three city-operated neighborhood parks, percolation ponds and a half-acre parcel used as a community garden all owned by the Santa Clara Valley Water District (SCVWD). There are also water well fields owned by the San Jose Water Company adjacent to the Guadalupe River. The study area has been divided into reaches, Reaches 7, 8, 9, 10a, 10b, 10c, 11a, 11b, 11c, 12, and Ross and Canoas Creeks. Reach 12 is included only in the LPP.

GENERAL DESCRIPTION OF THE PROJECT AND TOTAL ACREAGE REQUIRED (Locally Preferred Plan and National Economic Development Plan)

As discussed in the Introduction, the NED had to be significantly revised due to changes in Federal law regarding endangered species in the project area. This report will describe the revised NED and the LPP (not revised) and the real estate requirements for each to incorporate the real estate impact on the re-examination for the cost sharing of the LPP that is now to be based on a revised NED. The impact of the real estate costs in this re-examination is especially important for the purposes of the LRR because of increases in land value in the project area since the Feasibility Study was completed in 1998, and because the revised NED plan requires more land to be provided than the NED presented in the Feasibility Report. The increase in the land values since the Feasibility Report was done in 1998 is largely due to the vast increase in residential and high-density residential properties value. Most of the project area involves residential properties.

Further, it should be noted that there is a large difference in value, $45,204,671, between the Valley View Plan and the By-Pass Channel Plan. Much of the reason for this large difference is because the By Pass Channel Plan includes Reach 12, valued at $25,329,333, which is not included in the Valley View Plan.

Revised NED Plan (Valley View Plan)

The revised Valley View Plan provides 50-yr. level of protection for 12,000 cfs. It includes Reaches 7, 8, 9, 10a, 10b, 10c, 11a, 11b, 11c, and Ross and Canoas Creeks. Channel widening in certain areas, which was included in the original NED Plan is eliminated and replaced with acceptable features of the Bypass Channel Plan (LPP) scaled down to a 50-yr. Level of protection.

A total of 56.60 acres are required for this project. This will provide 35.57 acres for channel improvement work, bypass channels, and floodwalls; 14.76 acres for mitigation; and 6.27 acres for temporary work area areas. Most of the required lands are privately owned, however, the sponsor, SCVWD, does own approximately 26 acres of the project lands. Their ownership was considered in the gross appraisal and contingencies were eliminated for the lands owned by them. Other public agencies that own small areas of project lands are the Santa Clara County, City of San Jose, and the San Jose Water Company. The SCVWD also has flood control easements over 2.42 acres of privately owned lands and over 1.55 acres of publicly owned lands. In addition, they have a maintenance easement over 1.98 acres of privately owned lands. There are, therefore, only 5.05 acres that will need to have permanent rights acquired that are affected by easements out of the total acreage required for this project. The Appraisal Branch reviewed these easements and determined that these easements did not have a significant impact on the gross appraisal for this project at this phase. These easements will be considered in the site specific appraisals during the acquisition of the lands for the project.

Revised Valley View Plan (NED)
Total Acres – 56.60 acres
Total Value - $31,492,536

Valley View Plan in Feasibility Report Authorized in 1999 - $27,000,000

LPP (Bypass Channel Plan)

The Bypass Channel Plan increases the minimum main stem capacity downstream of Canoas Creek to 14,600 cfs and offers protection from the 100-yr. Flood event. Bypass channels would be constructed to convey flood flows instead of channel widening measures. Additional improvements would include replacement of five bridges and a combination of low floodwalls and bank widening. The downstream reach of Ross Creek will be channelized, and new culverts and flood walls will be placed along Canoas Creek to address backwater effects from the mainstem Guadalupe. A multi-purpose recreational trail will also be incorporated on access roads and other flood control structures of this plan.

A total of 186.92 acres are required for this project providing 139.34 acres for channel improvement work, such as bypass channels, and floodwalls, 21.3 acres for mitigation, 15.47 acres for recreation, and 10.28 acres for temporary work area. Some of the required lands are owned by the sponsor, and some are owned by other public agencies. The same easements as discussed in the NED Plan description apply to this plan.

By Pass Channel Plan
Total Acreage – 189.92 acres
Total Value - $75,813,329

Bypass Channel Plan in Feasibility Report Authorized in 1999 - $45,463,500

ESTATES

The non-Federal sponsor will acquire the minimum in real estate to support the construction, operation, and maintenance of the project. The estates for both the NED and LPP plans are as follows:

REVISED NED –The minimum estates for the NED Plan are channel improvement easements, flood protection levee easements, fee for mitigation, and temporary work area easements for the construction areas, staging areas. Lands that would satisfy the mitigation requirement are located with the project boundaries required for flood control. All lands that provide for multiple purposes, such as channel improvement work and mitigation, shall require the fee estate. Lands for the channel improvement work were valued at fee value. Those lands that are required only for flood control will require the channel improvement easement estate.

LPP – The minimum estates for the LPP are channel improvement easements, flood protection levee easements, temporary work area easements for the construction areas, staging areas, and fee for mitigation lands. There is a requirement for mitigation lands to be provided in conjunction with the flood control aspect of the project. Lands that would satisfy the mitigation requirement are located within the project boundaries required for flood control. In addition, there will be a recreational trail on roads that are also within the project boundaries. All lands that provide for multiple purposes, such as channel improvement work, mitigation, and recreation shall require the fee estate. Lands for the channel improvement work were valued at fee value. Those lands that are required only for flood control will require the channel improvement easement estate.

BASELINE COST ESTIMATE (NED AND LPP)

The Appraisal Branch of the Sacramento District Real Estate Division prepared the gross appraisals for this report. The gross appraisals have been reviewed and approved. All lands have been estimated at fair market value. The differences between State and Federal appraisal rules have been considered. There is no difference between the application of State and Federal rules in the valuation of the lands to be acquired. This report will be updated to include the final Real Estate Federal and non-Federal administrative costs. The non-Federal sponsor is in the process of preparing their estimate of acquisition costs and schedules based on their knowledge of project requirements and anticipated staffing and resource levels. Their estimate for the administrative costs and the Federal Administrative costs will be included with the reviewed and approved gross appraisal values for the revised NED and the LPP in a Real Estate MCACES that will be incorporated into the total project MCACES.

NED Baseline Cost Estimate

Project	Non-Federal	Federal	*Land (LERRs)	Project Cost
Upper Guadalupe (NED)	$5,020,965	$320,700	$31,492,536	$36,834,201

*Includes Lands, Damages, and Contingencies but does not include damages and contingencies for publicly owned lands.

LPP Baseline Cost Estimate

Project	Non-Federal	Federal	*Land (LERRs)	Project Cost
Upper Guadalupe (LPP)	$4,433,832	$345,300	$75,813,329	$80,592,461

*Includes Lands, Damages, and Contingencies but does not include damages and contingencies for publicly owned lands.

NON-FEDERAL SPONSOR'S ABILITY TO ACQUIRE

The non-Federal sponsor has a real estate staff and experience in acquiring real estate for County, State, and Federal projects. They have not previously received credit for lands described in this report and required for this project. The sponsor owns numerous properties within both the Valley View and By Pass Channel Plan designs. Standard crediting procedures are expected to be applied to these acquisitions. There are no known special crediting issues for any of the land for this project. The sponsor has been advised of the risks of acquiring property prior to the execution of the PCA.

The sponsor has condemnation authority. Chapter 1405 of the Statutes of 1951: Santa Clara Valley Water District Act (As Amended) declares that ".... The District may exercise the right of eminent domain, either within or without said District, to take any property necessary to carry out any of the objects or purposes of this act. ....".

PUBLIC LAW 91-646, The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended by Public Law 100-17

There are approximately 32 residences and nine commercial/industrial properties that will require relocation. The sponsor prepared a Relocation Plan for the Feasibility Report and will update this plan for the PED phase prior and Detailed Design Report, prior to executing the PCA. The sponsor is aware of and has experience with PL 91-646 requirements. The total cost for these relocations has been estimated at $679,500 for the Valley View Plan and $673,000 for the By Pass Channel Plan. These costs are included in the Baseline Cost Estimate.

These costs include payment of Last Resort Housing Benefits. Justification for Last Resort Housing Benefits will be provided as required by 14 C.F.R., 24.404 1992) on a case-by-case basis.

FACILITY AND UTILITY RELOCATIONS

There are numerous utility and facility relocations in this project for both the NED and the LPP Plan. They consist of bridge removal and replacements, relocations/modifications of sanitary sewer, water lines, storm water outfalls, relocation of booster pumps and two wells, two temporary railroad relocations, and two road replacements for culvert construction. These "relocations" have been researched and are considered at this time to be compensable since the facilities and utilities are there by an interest in real estate there is an ongoing requirement for them. The details on the exact utilities being impacted are being further studied in the upcoming final design phase. Following is information on the relocations:

Bridges – There are five bridges that will be affected by the project. They are the Willow Street Bridge and the Alma Avenue Bridge in Reach 7, which have been determined to be construction costs and not "relocations". Willow Glen Bridge in Reach 8, which has been determined to be a "relocation". Malone Street Bridge in Reach 9, determined to be a construction costs, and Curtner Bridge, determined to be a "relocation". The work to be done on the bridges mainly consists of removing and replacing them at a higher elevation to accommodate the project design. The bridge replacement would require the same road width with no parking. Any betterment would be cost shared between the sponsor and the City of San Jose.

Utility Relocations (Water and Sewer Lines, Storm Water Outfalls, Booster Pumps, and Wells) – These utilities and facilities will be re-routed and/or raised or lowered to accommodate the new bypass channel and design. Any betterment would be cost shared between the sponsor and the City of San Jose and/or Sam Jose Water Company.

Road Replacements – These roads are currently used, will continue to be used, and are owned by the Santa Clara County Transportation District. These modifications consist of in-kind road replacements. There will be detours or rerouting. The costs associated with the traffic delays have been computed and included in the cost analysis as represented in the Economics Appendix to the main report. There are no real estate impacts such as requirements for additional lands.

"ANY CONCLUSION OR CATEGORIZATION CONTAINED IN THIS REPORT THAT AN ITEM IS A UTILITY OR FACILITY RELOCATION TO BE PERFORMED BY THE NON-EDERAL SPONSOR AS PART OF ITS LERR RESPONSIBILITIES IS PRELIMINARY ONLY. THE GOVERNMENT WILL MAKE FINAL DETERMINATION OF THE RELOCATIONS NECESSARY FOR THE CONSTRUCTION, OPERATION, OR MAINTENANCE OF THE PROJECT AFTER FURTHER ANALYSIS AND COMPLETION OF FINAL ATTONEY'S OPINIONS OF COMPENSABILITY FOR EACH OF THE IMPACTED UTILITIES AND FACILITIES."

RECREATION (LPP ONLY)

The recreation feature proposed for this project is a multi-use recreation trail linking the study area with the existing trails along the Guadalupe River in downtown San Jose and upstream of Blossom Hill Road. There will not be a separate PCA for the recreation aspects of this project, and the SCVWD will be the sponsor for the recreation in this project as well a the flood control project. The design of the recreation trail has been coordinated with the City of San Jose, and brief stretches of the trail will be located off-site but will be the sole responsibility of the City of San Jose. The land required for recreation will be the same land required for flood control purposes. The recreation feature in this project is a recreation trail that will be located on the surface of gravel-based maintenance access roads that are required for the proposed project. The trail will follow the maintenance road and portions of the bypass channels and levees with the project area. In order to provide a continuous pathway, portions of the trail will leave the project lands and will be provided off-site on city streets by the City of San Jose. These off-site areas will be provided by the City of San Jose in coordination with the non-Federal sponsor and at no cost to the project. The off-site areas will provide picnic area and bathrooms, and will be included in the overall recreation plan. They will be located off the maintenance access roads and on lands that have been appraised for a channel improvement easement and for which the gross appraisal determined fee value. Additional details on the recreation features will be included in the main report and appropriate appendices. As state in the Estate Section of this report, lands that provide for multiple purposes such as in the case where recreation and a maintenance road are required, the fee estate will be required.

There is no land value attributed to the recreation features in this project. This is because the recreation features are included in the proposed project for flood control purposes. The channel improvement easements for these flood control areas were valued at full fee value, and there is no residual value for recreation.

UPPER GUADALUPE RIVER CANOAS CREEK SECTION

APN	MAP SHEET	OWNER	ADDRESS	PARCEL AREA	Project Real Estate Requirements T.W.A.E	P.P.L.E	F.P.E	F.P.L.E	C.I.E
				ACRES	ACRES	ACRES	ACRES	ACRES	ACRES
		Santa Clara County							
455-14-013	1	Santa Clara Valley Water District	San Jose, CA 95125	4.99	0.010	0.020			
Road	1	Almaden Expressway	N/A	N/A	0.030	0.060			
455-17-083	1,2	Santa Clara Valley Water District	San Jose, CA 95125	3.21	0.340	0.010	2.130	0.160	0.210
Road	2	Nightingale Drive	N/A	N/A	0.010	0.010			
			TOTAL IN ACRES =	8.20	0.39	0.10	2.13	0.16	0.21

LEGEND

P.P.L.E. = PERMANENT PIPELINE EASEMENT
P.F.E. = PERMANENT FLOWAGE EASEMENT
T.W.A.E. = TEMPORARY WORK AREA EASEMENT
F.P.L.E. = FLOOD PROTECTION LEVEE EASEMENT
C.I.E.= CHANNEL IMPROVEMENT EASEMENT

UPPER GUADALUPE RIVER REACH 11 SECTION					Project Real Estate Requirements				
APN	MAP	OWNER	ADDRESS	PARCEL AREA	T.W.A.E	P.P.L.E	FEE	F.P.L.E	C.I.E
	SHEET			ACRES	ACRES	ACRES	ACRES	ACRES	ACRES
		Santa Clara County							
459-06-035	1	Santa Clara Valley Water District	San Jose CA 95125	1.37	0.630				
Road	2,3	Almaden Expressway	N/A	N/A	0.020				
459-11-094	2	Santa Clara Valley Water District	San Jose CA 95125	0.50	0.630				0.280
459-06-002	2	Santa Clara County	San Jose CA 95118	0.10					0.050
459-02-007	2,3	Santa Clara County	San Jose CA 95118	1.32	0.020			0.020	0.300
459-06-031	1	Santa Clara Valley Water District	San Jose CA 95125	0.10	0.100				
459-06-032	1,2	Santa Clara Valley Water District	San Jose CA 95125	0.10	0.100				
451-22-062	2,3	Santa Clara County	San Jose CA 95118	0.00	0.001			0.001	
459-02-013	2,3	Charles & Joan Morton	3969 Wellington Square San Jose CA 95136	0.01	0.010				0.150
459-02-008	3	San Jose Water Works	374 W Santa Clara San Jose Ca 95196-0001	0.01	0.010		0.010	0.010	0.520
459-02-003	3	John San Filippo	13958 Alamden Expy San Jose CA 95118-1801	0.46			0.120		0.160
459-02-002	3	John San Filippo	13958 Alamden Expy San Jose CA 95118-1801	0.46			0.120		0.140
459-02-001	3	Santa Clara Valley Water District	San Jose CA 95125	0.91			0.210		0.370
459-01-003	4	Green Valley Corp	777 N 1st Unit 5th San Jose CA 95112-6337	0.93					0.030
459-01-004	4	Santa Clara Valley Water District	San Jose CA 95125	0.50					0.030
459-01-005	4	Santa Clara Valley Water District	San Jose CA 95125	0.50					0.040
459-01-021	4	Santa Clara Valley Water District	San Jose CA 95125	1.92			0.400		0.390
459-16-030	3,4	Santa Clara Valley Water District	San Jose CA 95125	2.22	0.540				1.080
			TOTAL IN ACRES =	11.41	2.06	0.00	0.86	0.03	3.54
		LEGEND							
P.P.L.E. =		PERMANENT PIPELINE EASEMENT							
FEE. =		FEE							
T.W.A.E. =		TEMPORARY WORK AREA EASEMENT							
F.P.L.E. =		FLOOD PROTECTION LEVEE EASEMENT							
C.I.E.=		CHANNEL IMPROVEMENT EASEMENT							

UPPER GUADALUPE RIVER REACHES 7 & 8 SECTION					Project Real Estate Requirements					
APN	**MAP SHEET**	**OWNER**	**ADDRESS**	**PARCEL AREA ACRES**	**T.W.A.E ACRES**	**P.P.L.E ACRES**	**R.E. ACRES**	**F.P.L.E ACRES**	**C.I.E ACRES**	**FEE ACRES**
		Santa Clara County								
264-48-006	1	Peninsula Cooridor Joint Powers Board	San Jose CA 95110	0.79	0.170	0.180			0.050	0.020
264-48-092	1	Santa Clara Valley Water District	San Jose CA 95125	0.61	0.010				0.280	0.110
264-48-094	1	State of California	N/A	0.27	0.010				0.120	0.060
264-48-010	1	State of California	N/A	0.25	0.010				0.130	0.020
264-48-101	1	State of California	N/A	0.11	0.040		0.030	0.010		
264-48-103	1	State of California	N/A	0.04					0.020	0.010
Road	1,2	FWY 87 and Willow Street	N/A	N/A	0.300	0.010		0.010	1.200	0.600
264-48-084	1	State of California	N/A	0.05					0.030	
264-48-098	1	Santa Clara Valley Water District	San Jose CA 95125	1.03	0.001	0.001			0.510	
434-04-001	2,3	Outdoor Systems Inc	1635 Eastshore Hy Berkeley CA 94710	1.72	0.360		0.070		0.030	
434-04-004	2	HRE Real Estate Inv LLC	205 Hindiyeh Ln San Martin CA 95046-9509	0.19					0.190	
434-04-006	2	State of California	N/A	0.02						0.020
434-04-003	2	Pied Piper Exterminators Inc	913 Willow St Ste 201 San Jose CA 95125-2380	0.19					0.080	
434-04-011	2	Pied Piper Exterminators Inc	913 Willow St Ste 201 San Jose CA 95125-2380	0.16						0.160
434-04-012	2	Pied Piper Exterminators Inc	913 Willow St Ste 201 San Jose CA 95125-2380	0.16						0.160
434-04-013	2	John Bruzzone Jr	433 Sunridge Dr Scotts Valley CA 95066-4938	0.20	0.190				0.010	
434-04-014	2	John Bruzzone Sr	913 Willow St Ste 201 San Jose CA 95125-2380	0.13	0.110				0.020	
434-04-079	2	County of Santa Clara	San Jose CA 95125	1.22					0.700	0.400
434-14-031	2	Randi Ewing	534 Minnesota Ave San Jose CA 95125-1751	0.20	0.020					0.020
434-14-030	2	Petronilo & Diane Martinez	540 Minnesota Ave San Jose CA 95125-1751	0.30	0.010					0.040
434-14-029	2	Charles & Catherine Mitchell	544 Minnesota Ave San Jose CA 95125-1751	0.11	0.010					0.040
434-14-028	3	Albert & Helen Gaetano	1150 Old Adobe Rd Los Gatos CA 95030	0.35	0.030					0.040
434-14-027	3	Robert & Karen Sztuk	560 Minnesota Ave San Jose CA 95125-1751	0.29	0.020					0.050
434-14-047	3	Adrianne Moreno	570 Minnesota Ave San Jose CA 95125-1751	0.44	0.030					0.050
434-13-034	2,3	County of Santa Clara	San Jose CA 95125	4.88	0.220				2.680	0.480
Road	3,4	Alma Avenue	N/A	N/A	0.010				0.120	
434-20-023	4	San Jose Elks Building Co	444 W Alma Ave San Jose CA 95110-3519	9.15	0.160			0.050	1.490	
434-19-046	4	Don Clemetson & Roy Chuna	3420 Claridge Dr Danville CA 94526-5510	N/A	0.070	0.160		0.010	0.030	
434-27-027	4	Santa Clara Valley Water District	San Jose CA 95125	0.39	0.010	0.010		0.010	0.150	0.210
434-27-120	4,5	Santa Clara Valley Water District	San Jose CA 95125	1.05					0.670	0.050
434-27-031	4,5	Segovia Trust	1535 Mackey Ave San Jose CA 95125-1247	0.22					0.150	0.010
434-27-032	5	Santa Clara Valley Water District	San Jose CA 95125	0.22					0.170	0.010
434-27-033	5	Charles & Dovie Leeper	1555 Mackey Ave San Jose CA 95125-1247	0.23					0.160	0.010
434-27-122	5	Santa Clara Valley Water District	San Jose CA 95125	0.22					0.570	0.940
434-27-038	5	Angie Fimbrez	3357 San Rivas San Jose CA 95148-2145	0.23					0.150	0.010
434-27-039	5	Santa Clara Valley Water District	San Jose CA 95125	0.22					0.140	0.010
434-27-040	5	James & Jimmi Roberts	1623 Mackey Ave San Jose CA 95125-1249	0.22					0.140	0.010
434-27-041	5	Bud Kanemoto	1633 Mackey Ave San Jose CA 95125-1249	0.22					0.150	0.010
434-27-042	5	Bertha & Kevin David	1641 Mackey Ave San Jose CA 95125-1249	0.22					0.140	0.010
434-27-043	5	Ricardo & Celia Salinas	1651 Mackey Ave San Jose CA 95125-1249	0.22					0.140	0.010
434-27-044	5	Mary Weeks & Elizabeth Laurent	1661 Mackey Ave San Jose CA 95125-1249	0.24					0.200	0.010
434-27-045	5	Vernon & Jo-Marie Tripp	24066 Tulip Dr Willits CA 95490-8843	0.24					0.200	0.010
434-27-124	5	Santa Clara Valley Water District	San Jose CA 95125	0.96					0.900	0.040
			TOTAL IN ACRES =	**27.96**	**1.791**	**0.361**	**0.10**	**0.09**	**11.72**	**3.63**

	LEGEND
FEE =	FEE
P.P.L.E. =	PERMANENT PIPELINE EASEMENT
R.E. =	ROAD EASEMENT
T.W.A.E. =	TEMPORARY WORK AREA EASEMENT
F.P.L.E. =	FLOOD PROTECTION LEVEE EASEMENT
C.I.E.=	CHANNEL IMPROVEMENT EASEMENT

UPPER GUADALUPE RIVER REACHES 9 & 10 SECTION

Project Real Estate Requirements

APN	MAP SHEET	OWNER	ADDRESS	PARCEL AREA ACRES	T.W.A.E ACRES	P.P.L.E ACRES	F.P.L.E ACRES	C.I.E ACRES	FEE ACRES
		Santa Clara County							
434-28-161	1	Santa Clara Valley Water District	San Jose CA 95125	0.17	0.010				
434-27-124	1	Santa Clara Valley Water District	San Jose CA 95125	0.96	0.010				
Road	1	Willow Gen Way	N/A	N/A	0.070			0.040	
434-29-065	1	Douglas Geoffray	644 Willow Glen Way San Jose CA 95125-1800	0.17	0.010				
455-21-066	1	San Jose Water Works	374 W Santa Clara St San Jose CA 95196-0001	2.72	0.010			0.920	
455-21-013	1	Andrew Craig	1719 Guadalupe Ave San Jose CA 95125-1228	0.14				0.010	
434-29-014	1	Clarence Gray Gloria Gray Trustee	4117 Prospect Dr Carmichael CA 95608-2010	0.28				0.010	0.010
455-21-067	1	Santa Clara Valley Water District	San Jose CA 95125	0.56	0.140			0.120	0.170
434-29-013	1	Gray Trust	4117 Prospect Dr Carmichael CA 95608-2010	0.43				0.010	0.070
455-21-017	1	Santa Clara Valley Water District	San Jose CA 95125	0.37	0.040			0.130	0.950
Road	1	Pine Avenue	N/A	N/A					0.050
439-25-032	1	Stanley & Maria Brown	1820 Creek Drive San Jose CA 95125-1842	0.21					0.030
455-21-068	1,2	Santa Clara Valley Water District	San Jose CA 95125	1.21	0.090			0.340	0.140
455-21-020	1	Garth Kacker	1752 Guadalupe Ave San Jose CA 85125-1227	0.14				0.010	
455-21-056	1,2	Mark Modeste & Tobin Douglas	1891 Almaden Rd San Jose CA 95125-1935	0.31	0.030			0.120	0.130
455-21-055	1,2	Theresa Jeachkie & Ralf & Lesley Jeachkie	226 El Camino Del Mar San Francisco CA 94121	0.16					0.010
455-21-057	2	Mark Modeste & Tobin Douglas	1891 Almaden Rd San Jose CA 95125-1935	0.42	0.020			0.160	0.020
455-31-027	2	San Jose Water Works	374 W Santa Clara St San Jose CA 95196-0001	1.16	0.060			0.560	0.050
439-25-021	2	Barbara Regan	1896 Creek Drive San Jose CA 95125-1842	0.24					0.010
439-25-020	2	Kip Lockwood	1904 Creek Drive San Jose CA 95125-1871	0.24					0.010
439-25-019	2	Walter & D Vanhoof Trust	1912 Creek Drive San Jose CA 95125-1871	0.23					0.010
455-31-043	2,3	Barbara Deuel & Joseph Filice	12285 Winter Gardens Dr Lakeside CA 92040	1.11	0.150		0.030	0.650	
Road	2,3	Almaden Road	N/A	N/A			0.010		
Road	3	Malone Road	N/A	N/A	0.100			0.020	
455-31-044	3	Santa Clara Valley Water District	San Jose CA 95125	0.20	0.030		0.020	0.100	
439-26-062	3	Santa Clara Valley Water District	San Jose CA 95125	1.01	0.010			0.610	0.390
439-1T-014	3	(439-63) N/A	N/A	N/A	0.030			0.060	0.020
439-26-060	3	Carol Letcher	800 Malone Road San Jose CA 95125-2639	0.42	0.030			0.010	0.060
439-26-026	3	Randall Klein	2106 Ardis Dr San Jose CA 95125-2603	0.26	0.030			0.010	0.050
439-26-059	3	Carol Letcher	800 Malone Road San Jose CA 95125-2639	0.68					0.020
439-26-025	3	Susan Walker & Richelle Goede	2110 Ardis Dr San Jose CA 95125-2603	0.26	0.020				0.030
455-18-102	3	Santa Clara Valley Water District	San Jose CA 95125	1.31	0.020		0.010	0.580	0.290
455-18-007	4,5	City Of San Jose	San Jose CA 95125	0.10	0.180		0.010	0.200	0.640
439-26-021	4	James & Maryanne Isensee	2126 Ardis Dr San Jose CA 95125-2603	0.28					0.010
439-26-020	4	Ann Pellegino	2130 Ardis Dr San Jose CA 95125-2603	0.20	0.030				0.050
439-26-019	4	Robert & Patricia Mikolic	PO Box 20115 San Jose CA 95160-0115	0.27					0.040
439-26-018	4	Lori Hall	2134 Ardis Dr San Jose CA 95125-2603	0.36					0.030
439-26-067	4	Santa Clara Valley Water District	San Jose CA 95125	0.21					0.060
Road	5	Curtner Avenue	N/A	N/A	0.130			0.040	
439-26-003	4	Arthur & Kathryn Zwern	2226 Coastland Ave San Jose CA 95125-2611	0.43					0.010
439-26-002	4	Joseph & Jennie Biasella	2236 Coastland Ave San Jose CA 95125-2611	0.34	0.010				0.040
439-26-001	4,5	Victor & Maria Torres	2246 Coastland Ave San Jose CA 95125-2611	0.42	0.040				0.080
455-27-010	5	City Of San Jose	San Jose CA 95125	0.39	0.100		0.030	0.260	
455-27-009	5	Desmond Johnson	15181 Becky Lane Monte Sereno CA 95030	1.40	0.060		0.030	0.610	
Road	5	Almaden Road	N/A	N/A	0.010		0.010	0.010	
Road	6	Almaden Expressway	N/A	N/A				0.050	
455-14-013	6	Santa Clara Valley Water District	San Jose CA 95125	4.99					0.060
455-27-008	7	Desmond Johnson	15181 Becky Lane Monte Sereno CA 95030	1.23	0.020		0.010	0.140	
455-29-086	7	Milton & Sylvia Machamer	1 Mt Rose Lane Petaluma CA 94952-5268	0.18				0.010	0.010
455-13-033	7,8	Santa Clara Valley Water District	San Jose CA 95125	6.31				0.520	1.120
455-12-010	8	Santa Clara Valley Water District	San Jose CA 95125	2.80				0.110	0.370
455-39-018	9	Santa Clara Valley Water District	San Jose CA 95125	2.68				0.040	0.040

UPPER GUADALUPE RIVER REACHES 9 & 10 SECTION

APN	MAP SHEET	OWNER	ADDRESS	PARCEL AREA	Project Real Estate Requirements T.W.A.E	P.P.L.E	F.P.L.E	C.I.E	FEE
				ACRES	ACRES	ACRES	ACRES	ACRES	ACRES
455-39-016	9	Rubino Salvatore & Patricia	PO Box 5699 San Jose CA 95150-5699	0.19				0.100	0.030
455-39-001	9	Santa Clara Valley Water District	San Jose CA 95125	0.50				0.270	
455-39-015	9	N/A	N/A	2.52	0.010			1.020	0.280
455-39-002	9	N/A	N/A	0.94	0.010			0.480	
Road	9	Hillsdale Avenue	N/A	N/A	0.080			0.130	
459-04-001	9	Santa Clara Valley Water District	San Jose CA 95125	0.79				0.460	
459-04-002	9	Santa Clara Valley Water District	San Jose CA 95125	0.45				0.420	
Road	9	Capitol Expressway	N/A	N/A	0.400			0.100	
			TOTAL IN ACRES =	43.35	1.990	0.000	0.16	9.44	5.39
		LEGEND							
FEE =		FEE							
P.P.L.E. =		PERMANENT PIPELINE EASEMENT							
R.E. =		ROAD EASEMENT							
T.W.A.E. =		TEMPORARY WORK AREA EASEMENT							
F.P.L.E. =		FLOOD PROTECTION LEVEE EASEMENT							
C.I.E.=		CHANNEL IMPROVEMENT EASEMENT							

UPPER GUADALUPE RIVER ROSS CREEK SECTION

APN	MAP SHEET	OWNER	ADDRESS	PARCEL AREA	Project Real Estate Requirements				
				ACRES	T.W.A.E ACRES	P.P.L.E ACRES	R.E. ACRES	F.P.L.E ACRES	C.I.E ACRES
		Santa Clara County							
459-01-021	9	Santa Clara Valley Water District	San Jose CA 95125	1.92	0.010	0.010			0.090
459-02-001	9	Santa Clara Valley Water District	San Jose CA 95125	0.91	0.010	0.010			0.010
Road	9	Almaden Expressway & Barglen Drive	N/A	N/A	0.020	0.070	0.010		
451-40-083	7	Don & Laura Dutcher	1296 Lynhurst Way San Jose CA 95118-1841	0.16	0.001	0.001			
Road	7	Vista Mont Drive	N/A	N/A	0.002	0.001			
451-40-082	6	Robert & Linda Huff	4215 Vista Mont Dr San Jose CA 95118-1848	0.14	0.001	0.001			
451-35-028	5	Doris De Marco	1354 Glacier Dr San Jose CA 95118-1731	0.16	0.001				
451-35-027	4	Timothy & Helen Evans	1362 Glacier Dr San Jose CA 95118-1731	0.14	0.001	0.001			
451-35-026	4	Gregg & Maria Meador	1370 Glacier Dr San Jose CA 95118-1731	0.14	0.001	0.001			0.300
451-35-024	4	Marybeth OHalloran	1386 Glacier Dr San Jose CA 95118-1731	0.07	0.001	0.001			
451-35-025	4	Richard & Sharon Inouye	1370 Glacier Dr San Jose CA 95118-1731	0.14	0.001	0.001			
451-35-023	4	Marybeth OHalloran	1386 Glacier Dr San Jose CA 95118-1731	0.14	0.001				
451-35-022	4	Anthony & Dorothy Navarro	1390 Glacier Dr San Jose CA 95118-1731	0.14	0.001				
451-35-021	4	David Caputo	1394 Glacier Dr San Jose CA 95118-1731	0.15	0.001	0.001			
451-35-020	4	Estelle Piper & Kevin Kennedy	1398 Glacier Dr San Jose CA 95118-1731	0.15	0.001	0.001			
451-35-019	4	Claude & Barbara Roy	1402 Glacier Dr San Jose CA 95118-1733	0.16	0.001	0.001			
451-35-018	4	Eric Hansen	1406 Glacier Dr San Jose CA 95118-1733	0.14	0.001	0.001			
451-35-017	3,4	David & Luciana Laszewski	1410 Glacier Dr San Jose CA 95118-1733	0.14	0.001				
451-35-016	3	Ken & Estella Diep	16600 NW Argyle Way Portland OR 97229-1865	0.14	0.001				
451-35-015	3	Wayne & Sue Lheureux	1418 Glacier Dr San Jose CA 95118-1733	0.14	0.001				
451-35-011	3	Craig & Susan Eddy	1434 Glacier Dr San Jose CA 95118-1733	0.14	0.001	0.001			
451-35-010	3	Princeton Burns	1438 Glacier Dr San Jose CA 95118-1733	0.14	0.001	0.001			
451-35-009	3	Gerald & Martha Dikun	1442 Glacier Dr San Jose CA 95118-1733	0.14	0.001	0.001			
451-35-008	3	Warren & O M Trust Whited	1446 Glacier Dr San Jose CA 95118-1733	0.14	0.001	0.001			
451-35-007	2,3	Kenneth Smith & Harriet Unzen	1450 Glacier Dr San Jose CA 95118-1733	0.14	0.001	0.001			
451-35-006	2	Richard & Marcelyn McIntire	1275 Mary Lee Way San Jose CA 95118-1539	0.14	0.001	0.001			
451-35-005	2	Westly & Erma Bolton	1454 Glacier Dr San Jose CA 95118-1733	0.15	0.001	0.001			
451-35-004	2	Edward & Claire McCarry	1456 Glacier Dr San Jose CA 95118-1733	0.14	0.001	0.001			
451-35-003	2	James & Agnes Mitchell	1458 Glacier Dr San Jose CA 95118-1733	0.15	0.001	0.001			
Road	2	Jarvis Avenue		N/A	0.001	0.001			
451-25-008	2	Kim Hai La Thanh	1462 Glacier Dr San Jose Ca 95118-1614	0.13	0.001	0.001			
451-25-006	2	Roman Catholic Bishop of San Jose CA	4325 Jarvis Ave San Jose CA 95118-1947	0.14	0.001	0.001			
451-25-005	2	Mark & Lea Flanagan	1468 Glacier Dr San Jose CA 95118-1614	0.14	0.001	0.001			
451-25-004	1,2	Brain & Erin Toombs	1470 Glacier Dr San Jose CA 95118-1614	0.15	0.001	0.001			
451-25-003	1	Annick Shinn	1472 Glacier Dr San Jose CA 95118-1614	0.16	0.001				
Road	2	Crest Haven Lane		N/A	0.010	0.010			
451-35-066	3	Lawrence & Lauren Parola	1419 Courtyard Dr San Jose CA 95118-1936	0.12	0.001				
451-35-065	3	Yuri Dolgov	1415 Courtyard Dr San Jose CA 95118-1936	0.12	0.001				
451-35-064	3	Robert & Susan Cavallaro	1413 Courtyard Dr San Jose CA 95118-1936	0.12	0.001				
451-35-063	3	Novella Moreno	1409 Courtyard Dr San Jose CA 95118-1936	0.12	0.001				
451-35-054	4	William & Gloria Hayward	1383 Courtyard Dr San Jose CA 95118-1934	0.12	0.001	0.001			
451-35-053	4	Eugene & Jolanta Kubacki	1381 Courtyard Dr San Jose CA 95118-1934	0.12	0.001	0.001			
451-35-052	4	Thelma Avenido	1379 Courtyard Dr San Jose CA 95118-1934	0.12	0.001	0.001			
451-36-070	4	Reubin & Linda Gibson	1377 Courtyard Dr San Jose CA 95118-1934	0.15	0.001	0.001			
451-36-071	5	Mark & Marianne Taliaferro	13825 Sheila Ave Morgan Hill CA 95037-9497	0.18	0.001	0.001			
451-36-054	5	Salvatore & Vita Aresco	1349 Montmorency Dr San Jose CA 95118-2040	0.15	0.001				
451-36-053	5	David Zecha	1345 Montmorency Dr San Jose CA 95118-2040	0.14	0.001				
451-36-052	5	Donald & Cynthia Phillips	1341 Montmorency Dr San Jose CA 95118-2040	0.14	0.001				
451-36-051	5	Dod & Patricia Woodstock	1335 Montmorency Dr San Jose CA 95118-2040	0.14	0.001				
451-36-050	5	Dennis & Cathleen Clark	1329 Montmorency Dr San Jose CA 95118-2040	0.14	0.001				
451-36-049	5	John & Diane Cropek	1323 Montmorency Dr San Jose CA 95118-2040	0.15	0.001				

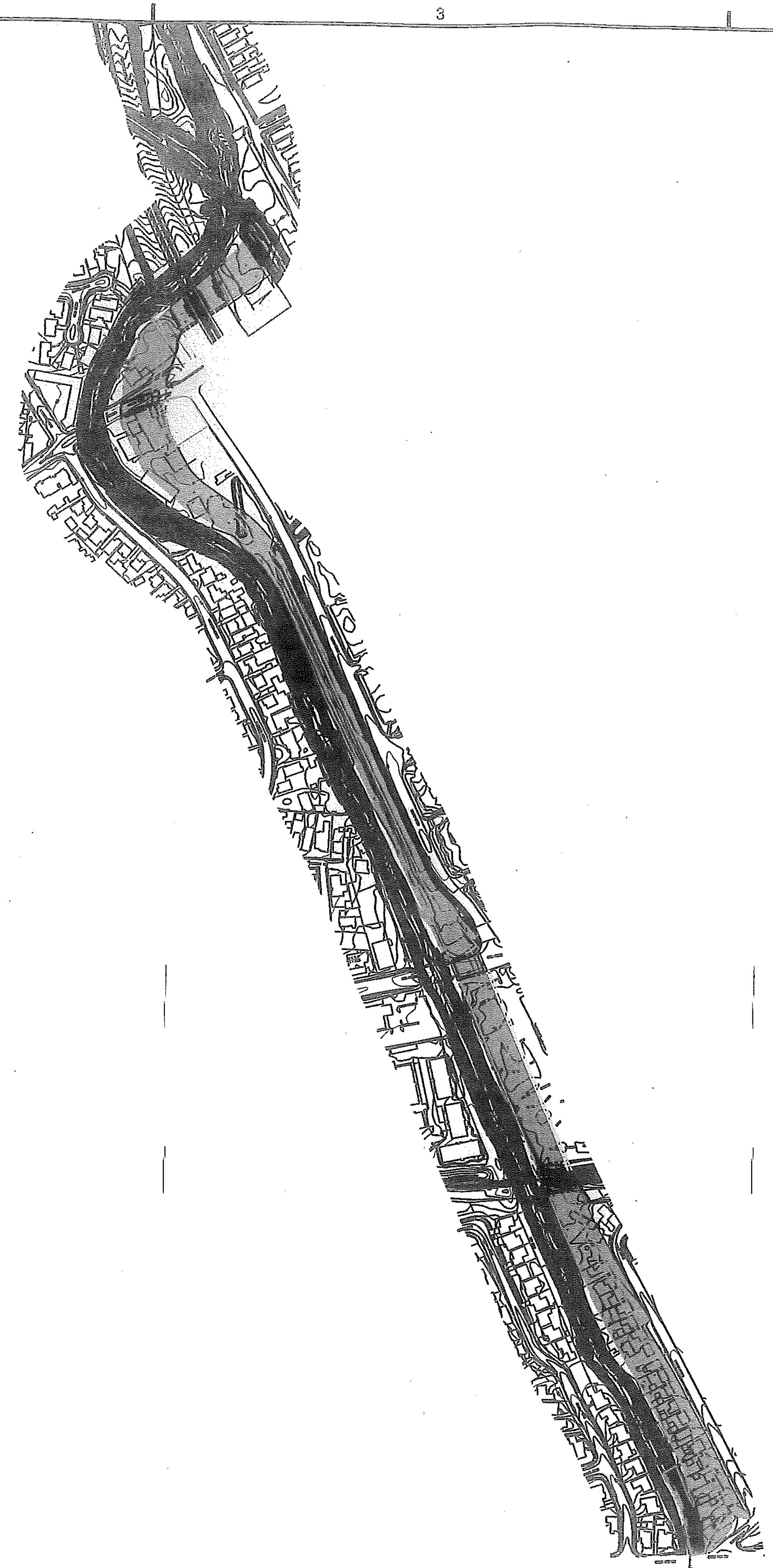
UPPER GUADALUPE RIVER ROSS CREEK SECTION

Project Real Estate Requirements

APN	MAP SHEET	OWNER	ADDRESS	PARCEL AREA ACRES	T.W.A.E ACRES	P.P.L.E ACRES	R.E. ACRES	F.P.L.E ACRES	C.I.E ACRES
451-36-048	5,6	Cameron Tulee	1317 Montmorency Dr San Jose CA 95118-2040	0.14	0.001				
451-36-047	6	Richard & Patricia Contreras	1311 Montmorency Dr San Jose CA 95118-2040	0.15	0.001				
451-37-024	6	Clyde & Nancy Manley	1305 Montmorency Dr San Jose CA 95118-2040	0.14	0.001				
451-37-023	6	Ginny & Mark Lockhart	1299 Montmorency Dr San Jose CA 95118-2035	0.14	0.001				
451-37-022	6	Robert & Carol Acosta	1287 Montmorency Dr San Jose CA 95118-2035	0.14	0.001				
451-37-021	6	Vicky & Leon Lee	1275 Montmorency Dr San Jose CA 95118-2035	0.14	0.001				
451-37-020	6	Norman & Mary Tuccoli	1263 Montmorency Dr San Jose CA 95118-2035	0.14	0.001				
451-37-019	6	John & Maryann Herzog	1249 Montmorency Dr San Jose Ca 95118-2035	0.14	0.001				
451-37-018	6	Judith Munley	1237 Montmorency Dr San Jose CA 95118-2035	0.13	0.001				
451-37-070	6	Robert & Linda Russell	1233 Montmorency Dr San Jose Ca 95118-2038	0.14	0.001				
451-37-069	6,7	Arthur & Candice Amos	1229 Montmorency Dr San Jose CA 95118-2038	0.12	0.001				
451-37-065	7	Philip & Jenefer Curtis	1211 Montmorency Dr San Jose CA 95118-2038	0.14	0.001				
451-37-064	7	Anthony & Michelle Chavez	1207 Montmorency Dr San Jose CA 95118-2038	0.14	0.001				
451-37-063	7	Dennis & Rayleen Coy	1203 Montmorency Dr San Jose CA 95118-2038	0.14	0.001				
451-37-062	7	Donald & Elena Meyers	1199 Montmorency Dr San Jose CA 95118-2028	0.14	0.001				
451-37-061	7	Robert & Jennifer Mihalko	1195 Montmorency Dr San Jose CA 95118-2028	0.14	0.001				
451-37-060	7	William Torzewski	1191 Montmorency Dr San Jose CA 95118-2028	0.15	0.001				
451-37-068	7	Yasma & Mae Bahous	1225 Montmorency Dr San Jose CA 95118-2038	0.14	0.001				
451-37-067	7	Ric & Lisa Vieler	1221 Montmorency Dr San Jose CA 95118-2038	0.14	0.001				
451-37-066	7	Michael & Ann	1217 Montmorency Dr San Jose CA 95118-2038	0.14	0.001				
451-37-059	7,8	Phillip & Michele Elia	1187 Montmorency Dr San Jose CA 95118-2028	0.14	0.001				
451-39-088	8	Thomas MacDonald	1168 Lynhurst Way San Jose CA 95118-1839	0.14	0.001	0.001			
451-39-089	8	Linda Harris	1164 Lynhurst Way San Jose CA 95118-1839	0.14	0.001	0.001			
451-37-058	8	Raymond & Melinda Denault	1183 Montmorency Dr San Jose CA 95118-2028	0.19	0.001				
451-37-057	8	Frank & Nancy Rinciari	1179 Montmorency Dr San Jose 95118-2028	0.22	0.001				
451-38-069	8	Bruce & Lisa Vong	4203 Saint Croix Ct San Jose CA 95118-2044	0.11	0.001				
451-38-068	8	John & Jane Chiu	4204 Saint Croix Ct San Jose CA 95118-2044	0.11	0.001				
451-38-053	8	Randall & Jacqueline Levinson	4205 Ranwick Ct San Jose CA 95118-2042	0.11	0.001				
451-38-052	9	Robert & Marcia Dean	4206 Ranwick Ct San Jose CA 95118-2042	0.11	0.001				
451-38-037	9	Robert & Laura Ash	4203 Briarglen Dr San Jose CA 95118-2026	0.11	0.001	0.001			
451-42-103	1	Santa Clara Valley Water District	San Jose CA 95125	1.64	0.110	0.010	0.200	0.070	0.800
451-35-077	2,3,4	Santa Clara Valley Water District	San Jose CA 95125	1.91	0.130	0.010	0.370	0.080	1.300
451-37-051	6,7,8	Santa Clara Valley Water District	San Jose CA 95125	1.96	0.110	0.001	0.350	0.090	1.370
451-38-036	8,9	Santa Clara Valley Water District	San Jose CA 95125	1.26	0.090	0.020	0.210	0.060	0.790
451-36-084	4,5	Santa Clara Valley Water District	San Jose CA 95125	0.40	0.040	0.010	0.060	0.030	0.260
451-36-083	5,6	Santa Clara Valley Water District	San Jose CA 95125	0.77	0.060		0.130	0.030	0.500
			TOTAL IN ACRES =	21.22	0.668	0.184	1.33	0.36	5.42

LEGEND

P.P.L.E. = PERMANENT PIPELINE EASEMENT
R.E. = ROAD EASEMENT
T.W.A.E. = TEMPORARY WORK AREA EASEMENT
F.P.L.E. = FLOOD PROTECTION LEVEE EASEMENT
C.I.E.= CHANNEL IMPROVEMENT EASEMENT



CALIFORNIA
VICINITY MAP

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DATUM: NORTH AMERICAN 1983
PROJECTION: STATE PLANE
ZONE: CALIFORNIA 3

LEGEND

▨	PERMANENT PIPELINE EASEMENT
☐	ROAD EASEMENT
☐	FEE
▨	TEMPORARY WORK AREA EASEMENT
▨	FLOOD PROTECTION LEVEE EASEMENT
▨	CHANNEL IMPROVEMENT EASEMENT

0 200 400 600 800 1000

UPPER GUADALUPE RIVER REACHES 7 & 8 SECTION

PORTION OF SECTIONS T.7.S & T.8.S, R.1.E, M.D.B.&M
SANTA CLARA COUNTY, CALIFORNIA

US Army Corps
of Engineers
San Francisco District

Symbol	Description	Date	Approved
B8	DESCRIPTION8	DATE8	APPROVAL8
B7	DESCRIPTION7	DATE7	APPROVAL7
B6	DESCRIPTION6	DATE6	APPROVAL6
B5	DESCRIPTION5	DATE5	APPROVAL5
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B3	DESCRIPTION3	DATE3	APPROVAL3
B2	DESCRIPTION2	DATE2	APPROVAL2
B1	DESCRIPTION1	DATE1	APPROVAL1

Mapping Lead: S.HICKS		Date Approved: DATE_APPROVED	Rev. REV_#
Dwn by: S.HICKS	Spec No.: SPEC_NO	Assisted by: ASSISTED_BY	
Reviewed by: REVIEWED_BY		Drawing Code: DRAWING_CODE	
Project Manager: PM		File name: FILE_NAME Plot date: PLOT_DATE Plot scale: PLOT_SCALE	

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
SAN FRANCISCO, CALIFORNIA

PREPARED BY:
REAL ESTATE PROGRAM
CADASTRAL SECTION
333 MARKET STREET
SAN FRANCISCO, CA 94105-2195

SAN_JOSE CALIFORNIA
UPPER_GUADALUPE
FLOOD_CONTROL

REAL_ESTATE
OWNERSHIP
SEPTEMBER_10_2003

Sheet
reference
number:
AREA
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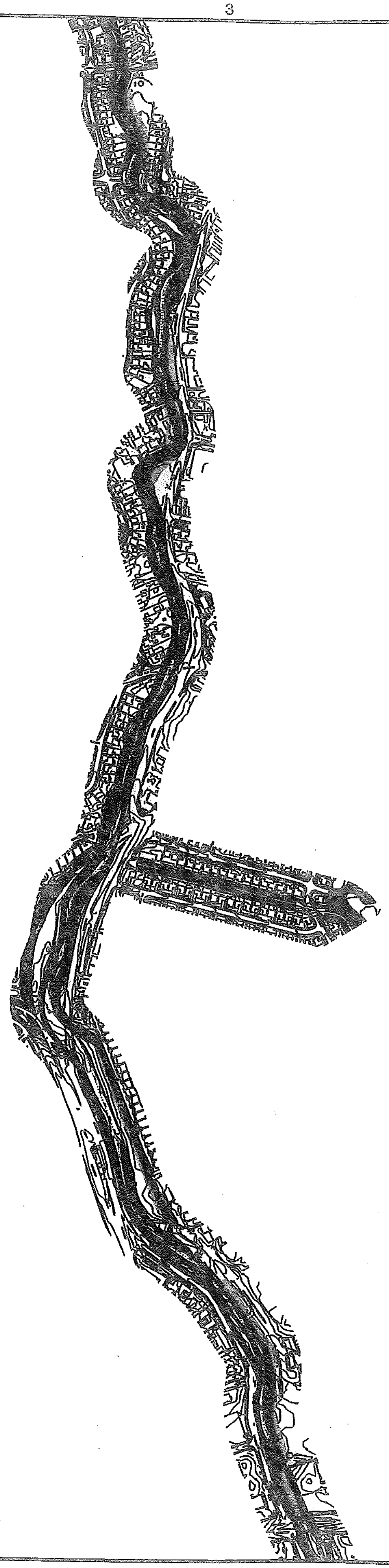
AMEND#



CALIFORNIA VICINITY MAP

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DATUM: NORTH AMERICAN 1983
PROJECTION: STATE PLANE
ZONE: CALIFORNIA 3

LEGEND

☐	FEE
░	TEMPORARY WORK AREA EASEMENT
▓	FLOOD PROTECTION LEVEE EASEMENT
▒	CHANNEL IMPROVEMENT EASEMENT

0 400 800 1200 1600 2000

UPPER GUADALUPE RIVER REACHES 9 & 10 SECTION

PORTION OF SECTIONS T.7.S & T.8.S, R.1.E, M.D.B.&M
SANTA CLARA COUNTY, CALIFORNIA

US Army Corps of Engineers
San Francisco District

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Δ7	DESCRIPTION7	DATE7	APPROVAL7
Δ6	DESCRIPTION6	DATE6	APPROVAL6
Δ5	DESCRIPTION5	DATE5	APPROVAL5
Δ4	DESCRIPTION4	DATE4	APPROVAL4
Δ3	DESCRIPTION3	DATE3	APPROVAL3
Δ2	DESCRIPTION2	DATE2	APPROVAL2
Δ1	DESCRIPTION1	DATE1	APPROVAL1

Mapping Lead: S.HICKS
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Spec No.: SPEC_NO
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Project Manager: PM
Date Approved: DATE_APPROVED
Rev. REV_#
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Plot date: PLOT_DATE
Plot scale: PLOT_SCALE

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CALIFORNIA
UPPER_GUADALUPE
FLOOD_CONTROL

REAL_ESTATE
OWNERSHIP

SEPTEMBER_10_2003

Sheet reference number:
AREA
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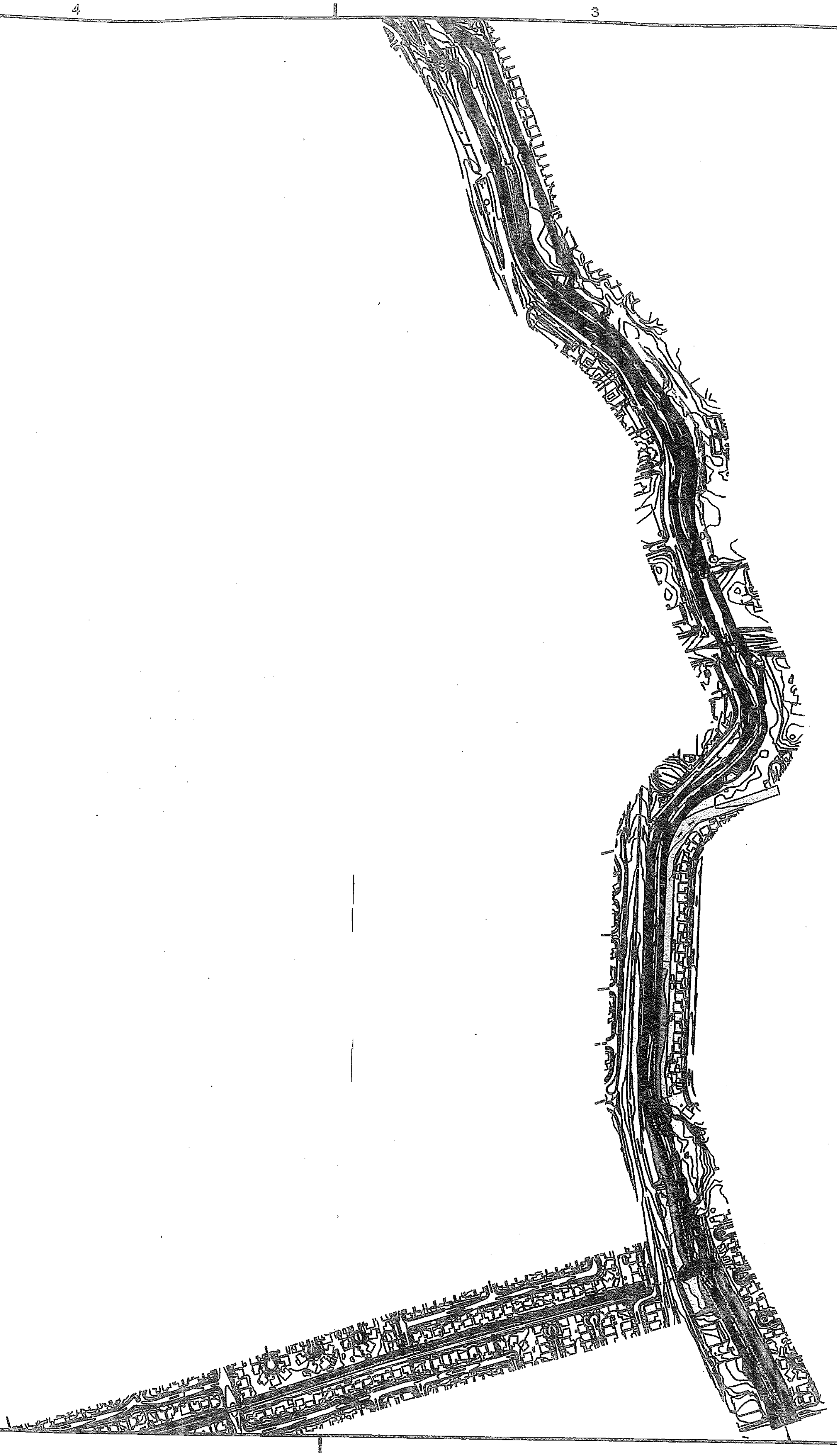
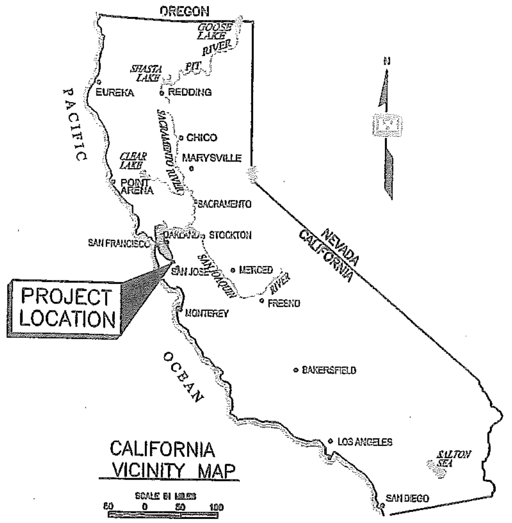
AMEND#





CALIFORNIA
VICINITY MAP

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DATUM: NORTH AMERICAN 1983
PROJECTION: STATE PLANE
ZONE: CALIFORNIA 3

LEGEND

☐	FEE
▨	TEMPORARY WORK AREA EASEMENT
■	FLOOD PROTECTION LEVEE EASEMENT
▩	CHANNEL IMPROVEMENT EASEMENT

0 40 80 120 160 200

UPPER GUADALUPE RIVER REACH 11 SECTION

PORTION OF SECTIONS T.7.S & T.8.S, R.1.E, M.D.B.&M
SANTA CLARA COUNTY, CALIFORNIA

US Army Corps
of Engineers
San Francisco District

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6	DESCRIPTION6	DATE6	APPROVAL6
5	DESCRIPTION5	DATE5	APPROVAL5
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3	DESCRIPTION3	DATE3	APPROVAL3
2	DESCRIPTION2	DATE2	APPROVAL2
1	DESCRIPTION1	DATE1	APPROVAL1

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
SAN FRANCISCO, CALIFORNIA

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333 MARKET STREET
SAN FRANCISCO, CA 94105-2195

Mapping Lead: S.HICKS		Date Approved: DATE_APPROVED	Rev. REV_#
Dwn by: S.HICKS	Spec No.: SPEC_NO	Assisted by: ASSISTED_BY	
Reviewed by: REVIEWED_BY		Drawing Code: DRAWING_CODE	
Project Manager: PM		File name: FILE_NAME Plot date: PLOT_DATE Plot scale: PLOT_SCALE	

SAN_JOSE
CALIFORNIA
UPPER_GUADALUPE
FLOOD_CONTROL

REACH_11
SECTION
SEPTEMBER_10_2003

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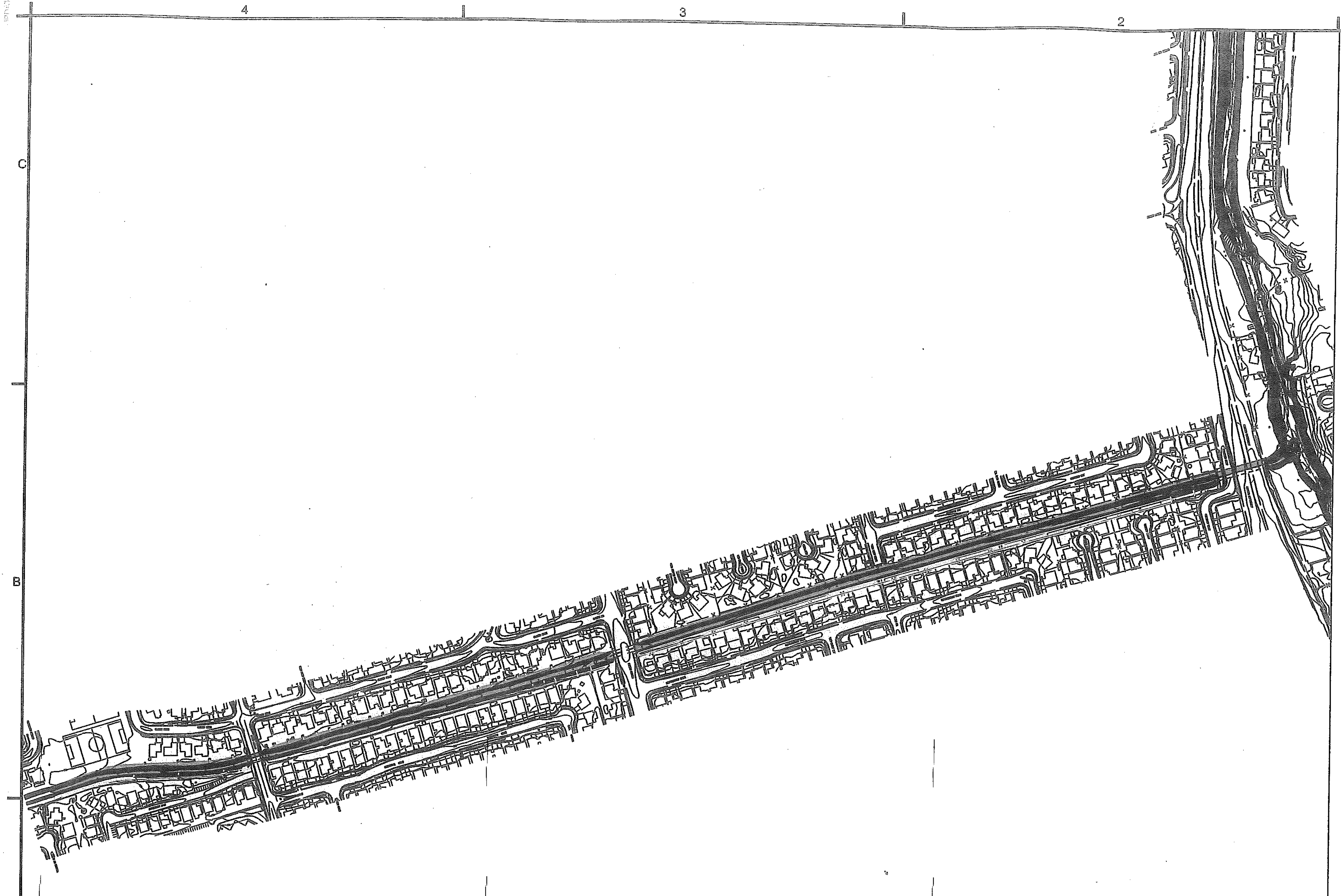
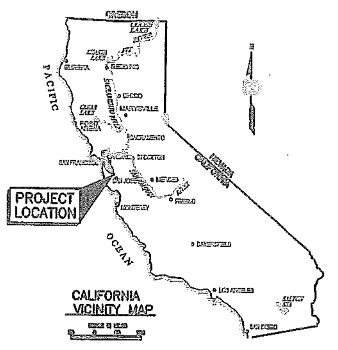
reference
number:
AREA
SEQ#
AMEND#



US Army Corps of Engineers
San Francisco District



CALIFORNIA VICINITY MAP

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DATUM: NORTH AMERICAN 1983
PROJECTION: STATE PLANE
ZONE: CALIFORNIA 3

LEGEND

- ▨ PIPELINE & TEMP. WORK AREA ESMNT
- ☐ PIPELINE & FLOOD LEVEE PROT. ESMNT
- ▨ PIPELINE & CHANNEL IMPROV. ESMNT
- ▨ PIPELINE & ROAD EASEMENT
- ☐ ROAD EASEMENT
- ▨ TEMPORARY WORK AREA EASEMENT
- ■ FLOOD PROTECTION LEVEE EASEMENT
- ■ CHANNEL IMPROVEMENT EASEMENT
- ■ PERMANENT PIPELINE EASEMENT

0 175 350 525 700 875

UPPER GUADALUPE RIVER ROSS CREEK SECTION

PORTION OF SECTIONS T.7.S & T.8.S, R.1.E, M.D.B.&M
SANTA CLARA COUNTY, CALIFORNIA

Symbol	Description	Date	Approved
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File name: FILE_NAME
Plot date: PLOT_DATE
Plot scale: PLOT_SCALE

DEPARTMENT OF THE ARMY
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SAN FRANCISCO, CALIFORNIA

PREPARED BY:
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CADASTRAL SECTION
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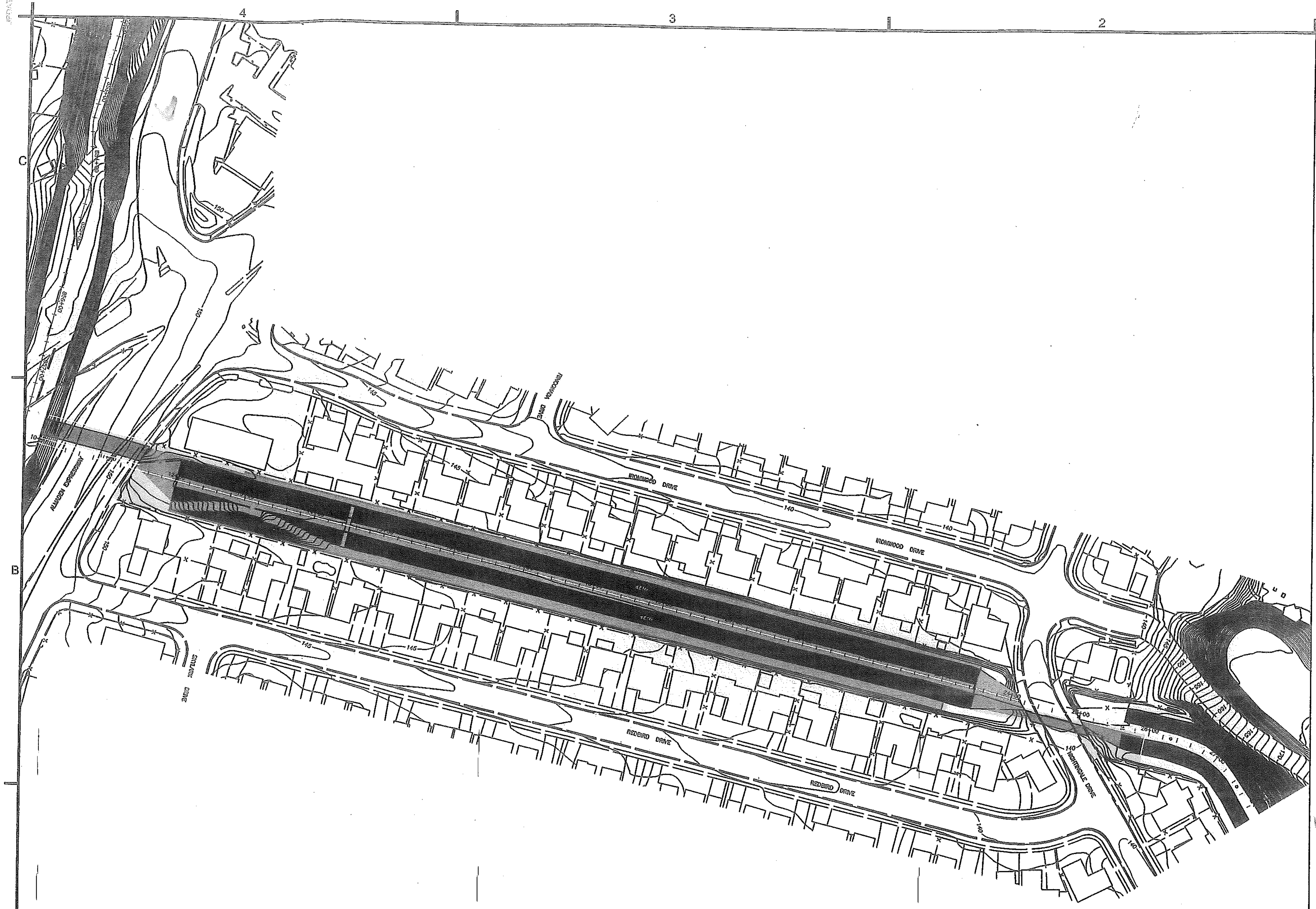
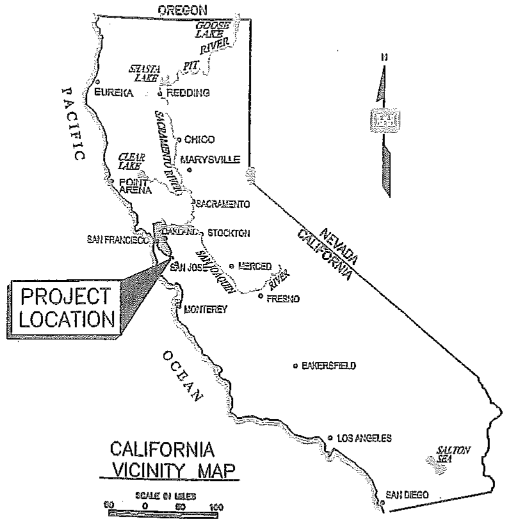
SAN FRANCISCO, CA 94105-2195

CALIFORNIA
SAN_JOSE
UPPER_GUADALUPE
FLOOD_CONTROL
ROSS_CREEK
SECTION
SEPTEMBER_10_2003

Sheet reference number:
AREA
SEQ
AMEND#





CALIFORNIA
VICINITY MAP

SCALE IN MILES
50 0 50 100

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DATUM: NORTH AMERICAN 1983
PROJECTION: STATE PLANE
ZONE: CALIFORNIA 3

LEGEND

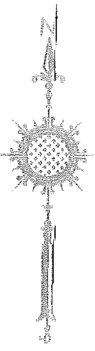
▨ FLOWAGE EASEMENT

▨ TEMPORARY WORK AREA EASEMENT

▨ FLOOD PROTECTION LEVEE EASEMENT

▨ CHANNEL IMPROVEMENT EASEMENT

▨ PERMANENT PIPELINE EASEMENT



0 60 120 180 240 300

UPPER GUADALUPE RIVER
CANOAS CREEK SECTION

PORTION OF SECTIONS T.7.S & T.8.S, R.1.E, M.D.B.&M
SANTA CLARA COUNTY, CALIFORNIA

US Army Corps
of Engineers
San Francisco District

Symbol	Description	Date	Approved
b8	DESCRIPTION8	DATE	APPROVAL
b7	DESCRIPTION7	DATE	APPROVAL
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b1	DESCRIPTION1	DATE	APPROVAL

Mapping Lead: S.HICKS		Date Approved: DATE_APPROVED	Rev. REV_#
Dwn by: S.HICKS	Spec No.: SPEC_NO	Assisted by: ASSISTED_BY	
Reviewed by: REVIEWED_BY		Drawing Code: DRAWING_CODE	
Project Manager: PM		File name: FILE_NAME Plot date: PLOT_DATE Plot scale: PLOT_SCALE	

DEPARTMENT OF THE ARMY
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SAN FRANCISCO, CALIFORNIA

PREPARED BY:
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SAN_JOSE

CALIFORNIA
UPPER_GUADALUPE_RIVER
FLOOD_CONTROL

CANOAS_CREEK
FLOOD_CONTROL
SEPTEMBER_10_2003

Sheet
reference
number:
AREA
SEQ#
AMEND#

T4: MICRO-COMPUTER AIDED COST ESTIMATES (MCACE)

Summaries of the MCACES for the Valley View and authorized plans with modifications are presented on the following pages. Basis of cost and contingency percentages are also included.

UPPER GUADALUPE RIVER FLOOD CONT
Bypass Channel Plan (100-YR Level) (LPP)

Designed By: CESPN - San Francisco District
Estimated By: Cost & Spec Engineering Section

Prepared By: George Liu
ITR: Sherman Fong - SPK

Preparation Date: 10/08/03
Effective Date of Pricing: 09/01/03

Sales Tax: 8.0%

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1. Costs were grouped by each reach/area under different operation categories.
2. Cost items in the "Land and Damages", "Planning & Engineering" & "Construction Management" categories were based on the previous 100 year plan 10/01/97 established and escalated to 1st Qtr/2004.
3. All cost items in "Floodway Control & Diversion Structure" category were based on the Qantity Take-off List from A/E: Moffatt & Nichol.
4. For all items newly priced, the latest version of UPB or Means Cost Data were based.

BASIS OF COST

1. Introduction

The project area is located in urbanized southwestern San Jose, which lies in the southern portion of highly urbanized Santa Clara Valley. Santa Clara Valley lies in the center of Santa Clara County in west central California, immediately south of San Francisco Bay.

The Guadalupe River is the second largest stream in Santa Clara County. The river discharges into the San Francisco Bay approximately 20 miles north of its origin, the Santa Cruz Mountains. The Guadalupe drains an area of approximately 170 square miles of primarily residential and commercial, with some industrial and agricultural land.

The study area includes approximately 5-1/2 miles of the Upper Guadalupe River main stem between the Southern Pacific Railroad Bridge and the Blossom Hill Road Bridge. Two tributaries, which frequently overtop their banks, Ross Creek and Canoas Creek, are also included within the study area. In the project area, approximately 7,500 commercial, industrial, and residential structures are located within the Flood Emergency Management Association's (FEMA) 100-year floodplain.

2. Cost Re-Evaluation Adjective

The purpose of the economic re-evaluation of the costs and benefits of the Upper Guadalupe River Flood Damage Reduction Project are two-fold:

1. Documentation of the results of the economic reevaluation of the costs and benefits in this Limited Reevaluation Report (LRR). The economic reevaluation serves to affirm that the project remains a sound economic investment for the Federal Government.

2. Documentation of design changes to the Valley View Plan [the National Economic Development Plan (NED) plan by the 1998 Upper Guadalupe River Final Feasibility Report] resulting from post-authorization changes in federal environmental law. While the Bypass Channel Plan [the Corps of Engineers (COE) recommended and Locally Preferred Plan (LPP)] was the plan authorized for construction, the Valley View Plan sets the basis for determining the Federal cost share to construct the Bypass Channel Plan because it was determined to be the NED plan in the 1998 Feasibility Report.

3. Basis of Cost

The project cost estimate was updated using the MCACES (Micro- Computer Aided Cost Engineering System) program and is based on the MCACES cost estimate developed for the Upper Guadalupe River Final Feasibility Report (1998). This 1998 estimate was used as the basis for the cost re-evaluation and is dated October 2003 (1QFY04) year price level. Construction is anticipated to commence in summer FY04; each reach will commence during differing fiscal calendar years. Each construction item within each work category [code of accounts (COA) i.e. COA 02 Relocations] has been escalated by their respective cost index factor (EM1110-2-1304, 30 September 2003) to the anticipated mid-point of construction. The resulting cost/factor will lead to the fully funded cost.

The cost estimates for Planning, Engineering and Design Engineering (PED), Engineering and Design (E&D) and Support and Administration (S&A) during construction were developed by project management (PM), in conjunction with Engineering & Technical Services (ETS).

All costs are considered to be construction or "new work" costs, hence there are no Operations and Maintenance (O&M) costs include in this estimate.

Contract Work: The assumption was made that the prime contractor will perform all land-based work 5 days/week, 8 hrs/day. Included in the costs are factors for prime contractor markups: 8% for profit and 1.5% for bonds. Costs for subcontractor's overhead and profit vary depending on the construction task. Variable contingency percentages are based upon specific construction tasks applied for the estimate. Particular emphasis on the unknown conditions for the construction for soil nails, cribwall/gabion/shotcrete walls and bridge construction/relocations; some refined details unknown at the time of this estimate. Applied percentages: 4% for Office Overhead. Field OH estimated with manpower and hours within the MCACES estimate.

Pricing: Estimated costs are based on October 2003 price levels. Plant and equipment costs are from EP 1110-1-8 " Construction Equipment Ownership and Operating Expense Schedule Region 7", 8 June 99 database, "Unit Price Book" (UPB) Jan 2001 database, and "National Labor Rates" Jan 2001 database and "National Crew Rates" Jan 2001 database supplied with the MCACES program. Escalation factors were applied to the following to reflect prices from year 2Qtr FY01 to 1Qtr FY04 - Relocations: 7.23%; Recreations: 6.84%; Fish and Wildlife Facilities: 6.82%; Floodways Controls and Diversion Structures: 6.82%.

4. Construction

Major construction features of the project include the following:

- Shotcrete facing of excavated river slope facing.
- Excavation and work along the base of the wall for shotcrete work.

- Gabion and Cribwall construction for river bank flood/erosion protection.
- Demolition/relocation of existing bridges
- Cast-In-Place Concrete Piles for gabion wall anchors.

Mobilization and Demobilization: Assume all equipment and labor is available locally and mobilization would take 8 hours and demobilization would take 8 hours.

Shotcrete facing of the river banks: Construction and application of the shotcrete wall with reinforcement, soil nail installation, etc. is proposed to provide slope protection and stabilization. Therefore, majority of the preparation, access and shotcrete work on the river slope shall be from the existing river bed. The estimated cost reflects this construction approach.

Gabion and Cribwall: Construction of the cribwalls is straight forward and labor intensive. Attention to surface application to achieve fish friendly passage and as well as a desired environmentally sustainable area for the acquatic life and other creatures. Future plantings a possibility to ensure fish friendly passage.

Demolition/relocation of existing bridges: Several existing bridges will be subject to demolition or new proposed bridge relocations (construction) to provide for the channel improvement. Extent of the bridging and culvert design is at the schematic stage of design. Additional information and details for the bridge design will be made during PED.

Cast-In-Place Concrete Piles: Installation of the CIP concrete piles and pile reinforcement requires drilling from top of creek bank. Integrity of the CIP is dependent on the quality of the drilling and concrete placement of the piles; therefore, careful and methodical construction of the CIP is important.. The reinforcement "cage" for the shotcrete/cribwall/gabion walls will be tied to the anchors in the cliff face.

Real Estate Costs: Developed by Susan Miller from RE-SPN PPMD and Mary Leotaud- Real Estate Division, SPK.

CONTINGENCY PERCENTAGES

1. ***Mobilization and Demobilization***: 10 percent was determined using an average percentage for similar type work. Cost could differ depending on transfer distances, equipment availability, amount of equipment required, type of equipment used by the Contractor, road conditions, weather and traffic.

2. ***Clearing and Grubbing:*** 10 percent was determined using an average percentage for similar type work. Construction is relatively straight forward. Cost may change since it is unclear on the extent of the clearing and grubbing.

3. ***Bridges Relocations & Construction:*** 20 percent was used. Several existing bridges as will be subject to demolition or new proposed bridges relocation (built) to provide for the channel improvement. Extent of the bridging and culvert design is at the schematic stage. Additional information and details for the bridge design will be made during PED.

4. ***Utility Relocations and Modifications:*** 15 percent was used. Although this task is straight forward, details for the removal of and replacement of existing utilities will be further refined during PED. Shoring may be required, depending on unanticipated site conditions.

5. ***Roadway Replacement:*** 10 percent applied. Replacement and construction of the roadways will require coordination with regards to the placement of the material, existing soil conditions, etc. Attention to the construction and consideration of drainage in this area a must.

6. ***Storm Drain Modifications:*** 15 percent was applied. Construction for the storm drains are straight forward. Modifications and site conditions may play a role in the location, sizing, placement of the storm drains.

7. ***Riprap:*** 15 percent was applied. Cost was based the consultants investigation and approximation as to the quantity of material necessary to provide for water flow conveyance, etc.

8. ***Shotcrete:*** 20 percent was used. Application of the shotcrete for river slope protection is based upon manpower and equipment suspended from a crane due to the site, and the ability of the laborer to apply the shotcrete to the existing slope face. These are two critical elements of this phase of the construction.

9. ***Cribwalls:*** 20 percent was used. Construction of the cribwalls is straight forward, though labor intensive. Attention to surface application to achieve fish friendly passage and as well as a desired environmentally sustainable area for the acquatic life and other creatures. Future plantings a possibility to ensure fish friendly passage.

10. ***Gabion walls:*** 20 percent was used. Construction of the gabion walls is straight forward, though labor intensive. Attention to surface application to achieve fish friendly passage and as well as a desired environmentally sustainable area for the acquatic life and other creatures. Future plantings a possibility to ensure fish friendly passage.

11. ***Soil Nails:*** 10 percent was applied. Installation of the soil nails requires drilling into the existing creek side slope. Drill equipment to be from existing creek bed. Integrity of the soil nails is dependent on the quality of the drilling and encasement of the soil nails; therefore, careful methodical placement of the spoil nails is important. The reinforcement "cage" for the shotcrete/cribwall/gabion walls will be tied to the anchors in the cliff face.

12. ***Concrete Cast-In-Place Piles:*** 20 percent was applied. Installation of the CIP concrete piles and pile reinforcement requires drilling from top of creek bank. Integrity of the CIP is dependent on the quality of the drilling and concrete placement of the piles; therefore, careful and methodical construction of the CIP is important.. The reinforcement "cage" for the shotcrete/cribwall/gabion walls will be tied to the anchors in the cliff face.

13. ***Riprap:*** 15 percent was applied. The placement of riprap is straight forward. Placement and final quantity of riprap to be determined in field, due to existing site conditions.

13. ***Culverts:*** 15 percent was applied. The drainage system is critical but straight forward in the construction. Modifications and site conditions may play a role in the location, sizing, placement of the culverts.

14. ***Traffic Control:*** 10 percent was applied. This is straight forward. Changes in the sequencing of future construction may dictate changes to the traffic control plan.

14. ***Mitigation:*** 15 percent was applied. Mitigation/plantings is site specific and dependent on the site conditions. Construction grading, creek improvements, erosion control are factors that are taken into consideration when estimating for mitigation.

15. ***Recreation: New Trails/Pedestrian Improvements:*** 15 percent applied. This task is straight forward during construction. However, public access and aesthetic features are important elements to the overall project. Exact location and placement of the features will be determined in the field.

16. ***Channel Excavation/Structural Fill:*** 15 percent applied. Channel excavation and structural fill is straight forward. Quantities to be refined and are dependent on final project design, and eventually on site conditions.

17. ***Site Demolition: Residential and Commercial Property:*** 10 percent applied. Site demolition is straight forward. Unknown site conditions may arise.

18. ***Concrete/Masonry Wall Construction:*** 15 percent applied. Construction of the concrete and masonry walls are straight forward in nature. Site specific conditions may dictate any changes to the design details and will be addresses accordingly.

19. ***Articulated Concrete Mat/Slope Erosion Stability:*** 15 percent applied. Slope erosion control is a must to provide stability for the newly excavated creek side slopes. Design of walls to be finalized during PED. Quantity of material and concept are dependent on the requirements of water conveyance, etc.

20. ***Contractor Office OH:*** 4% contingency applied to contractor office OH.

21. ***Contractor Field OH:*** Contractor field OH determined by crew and anticipated labor hours. 10% contingency applied.

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Tue 17 Aug 2004                Tri-Service Automated Cost Engineering System (TRACES)                  TIME 10:48:25
Eff. Date  09/01/03     PROJECT UPG11Z:   UPPER GUADALUPE RIVER FLOOD CONT - Bypass Channel Plan (100-YR
                                          UPPER GUADALUPE - Bypass Plan (100-Yr Level)                 SUMMARY PAGE    1
                                              ** PROJECT OWNER SUMMARY - FEATURE **

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                                                                  QUANTY UOM    CONTRACT  CONTINGN  ESCALATN TOTAL COST     UNIT
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                   01  Project Cost                                 1.00 JOB 187,361,261  16543110 8,164,088 212,068,459********
                                                                             ----------- --------- --------- -----------
                 TOTAL UPPER GUADALUPE RIVER FLOOD CONT             1.00 EA  187,361,261  16543110 8,164,088 212,068,459********
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Tue 17 Aug 2004                  Tri-Service Automated Cost Engineering System (TRACES)                      TIME 10:48:25
Eff. Date  09/01/03     PROJECT UPG11Z:   UPPER GUADALUPE RIVER FLOOD CONT - Bypass Channel Plan (100-YR
                                          UPPER GUADALUPE - Bypass Plan (100-Yr Level)                    SUMMARY PAGE    2
                                             ** PROJECT OWNER SUMMARY - BID ITEM **

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                                                                QUANTY UOM    CONTRACT  CONTINGN  ESCALATN  TOTAL COST    UNIT
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                  01  Project Cost

                  01_01  LANDS AND DAMAGES                        1.00 JOB  64,376,673         0         0  64,376,67364376673
                  01_02  RELOCATIONS                              1.00 JOB  19,679,281 3,088,343 1,646,099  24,413,72424413724
                  01_06  FISH AND WILDLIFE FACILITIES             1.00 JOB   6,924,881   633,732   331,357   7,889,971 7889971
                  01_14  RECREATION PARKS                         1.00 JOB   1,953,743   195,374   147,000   2,296,117 2296117
                  01_15  FLOODWY CNTRL & DIVRSION STRUCT          1.00 JOB  75,931,994  12625660 6,039,632  94,597,28794597287
                  01_30  PLANNING, ENGINEERING and DESIGN         1.00 JOB   9,868,979         0         0   9,868,979 9868979
                  01_31  CONSTRUCTION MANAGEMENT                  1.00 JOB   8,625,708         0         0   8,625,708 8625708
                                                                           ----------- --------- --------- -----------
                   TOTAL Project Cost                             1.00 JOB 187,361,261  16543110 8,164,088 212,068,459********
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                                                                         QUANTY UOM    CONTRACT  CONTINGN  ESCALATN  TOTAL COST    UNIT
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                  01  Project Cost

                  01_01  LANDS AND DAMAGES

                  01_01.01  REACH 7                                        1.00 JOB  10,540,583         0         0  10,540,58310540583
                  01_01.02  REACH 8                                        1.00 JOB  10,546,483         0         0  10,546,48310546483
                  01_01.03  REACH 9                                        1.00 JOB  12,241,158         0         0  12,241,15812241158
                  01_01.04  REACH 10A                                      1.00 JOB   2,406,584         0         0   2,406,584 2406584
                  01_01.05  REACH 10B                                      1.00 JOB   2,404,584         0         0   2,404,584 2404584
                  01_01.06  REACH 10C                                      1.00 JOB   2,401,484         0         0   2,401,484 2401484
                  01_01.07  REACH 11                                       1.00 JOB   5,908,825         0         0   5,908,825 5908825
                  01_01.08  REACH 12                                       1.00 JOB  16,087,172         0         0  16,087,17216087172
                  01_01.09  CANOAS CREEK                                   1.00 JOB      82,600         0         0      82,600   82600
                  01_01.10  ROSS CREEK                                     1.00 JOB   1,757,200         0         0   1,757,200 1757200
                                                                                 ----------- --------- --------- -----------
                      TOTAL LANDS AND DAMAGES                              1.00 JOB  64,376,673         0         0  64,376,67364376673


                  01_02  RELOCATIONS

                  01_02.01  Reach 7                                        1.00 JOB   7,491,157 1,369,459   640,622   9,501,238 9501238
                  01_02.02  Reach 8                                        1.00 JOB   1,705,602   286,840   144,054   2,136,496 2136496
                  01_02.03  Reach 9                                        1.00 JOB   3,512,266   434,009   285,316   4,231,591 4231591
                  01_02.04  Reach 10a                                      1.00 JOB   2,865,980   545,729   246,667   3,658,375 3658375
                  01_02.06  Reach 10c                                      1.00 JOB     638,891    64,969    50,889     754,748  754748
                  01_02.07  Reach 11                                       1.00 JOB     450,789    47,634    36,036     534,460  534460
                  01_02.08  Ross Creek                                     1.00 JOB   1,969,803   207,245   157,401   2,334,448 2334448
                  01_02.09  Canoas Creek                                   1.00 JOB   1,044,793   132,459    85,115   1,262,367 1262367
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                      TOTAL RELOCATIONS                                    1.00 JOB  19,679,281 3,088,343 1,646,099  24,413,72424413724


                  01_06  FISH AND WILDLIFE FACILITIES

                  01_06. 1  MITIGATION                                     1.00 JOB   4,224,881   633,732   331,357   5,189,971 5189971
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01_06. 5	MITIGATION&MONITORING PLAN (MMP)	1.00	JOB	2,700,000	0	0	2,700,000	2700000
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	TOTAL FISH AND WILDLIFE FACILITIES	1.00	JOB	6,924,881	633,732	331,357	7,889,971	7889971
01_14	RECREATION PARKS							
01_14.01	MOB/DEMOB	1.00	EA	40,629	4,063	3,057	47,749	47749
01_14.02	REACH 7A	1.00	EA	184,121	18,412	13,853	216,386	216386
01_14.03	REACH 7B and 8	1.00	EA	1,272,125	127,212	95,715	1,495,052	1495052
01_14.04	REACH 10C	1.00	EA	28,341	2,834	2,132	33,308	33308
01_14.05	REACH 11	1.00	EA	349,066	34,907	26,264	410,236	410236
01_14.06	REACH 12	1.00	EA	79,462	7,946	5,979	93,387	93387
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	TOTAL RECREATION PARKS	1.00	JOB	1,953,743	195,374	147,000	2,296,117	2296117

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                                                  QUANTY UOM   CONTRACT  CONTINGN  ESCALATN  TOTAL COST    UNIT
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              01_15  FLOODWY CNTRL & DIVRSION STRUCT

              01_15.51  REACH 7: D/S SPTC TO D/S UPRR      1.00 JOB 18,313,941 3,223,851 1,468,877  23,006,66923006669
              01_15.52  REACH 8: D/S UPRR TO D/S WILLOW    1.00 JOB  8,764,245 1,460,244   697,310  10,921,79910921799
              01_15.53  REACH 9: WLLW GLN TO CURTNR AVE    1.00 JOB  8,765,181 1,521,974   701,584  10,988,73910988739
              01_15.54  REACH 10A: CURTNR AVE-S. ALM EXP   1.00 JOB  3,383,759   560,397   268,991   4,213,147 4213147
              01_15.55  REACH 10B: S. ALM EXP-N. ALM EXP   1.00 JOB    194,834    22,776    14,841     232,451  232451
              01_15.56  REACH 10C: STREAM GAGE STA         1.00 JOB 11,709,263 2,143,182   944,737  14,797,18214797182
              01_15.57  REACH 12: CHYNOWETH-BLSM HILL RD   1.00 JOB  2,461,894   358,400   192,344   3,012,638 3012638
              01_15.58  REACH 11: CAP'TL EXP-BRANHAM LN    1.00 JOB 10,254,333 1,847,213   825,325  12,926,87112926871
              01_15.59  ROSS CRK: AM EXP- JARVIS AVE       1.00 JOB  5,915,161   856,066   461,798   7,233,025 7233025
              01_15.60  CANOAS CRK: U/S ALM-115' NIGHT'    1.00 JOB    516,449    66,264    39,741     622,454  622454
              01_15.99  ASSOCIATED GENERAL ITEMS           1.00 JOB  5,652,935   565,294   424,083   6,642,312 6642312
                                                                ----------- --------- --------- -----------
                  TOTAL FLOODWY CNTRL & DIVRSION STRUCT    1.00 JOB 75,931,994  12625660 6,039,632  94,597,28794597287

              01_30  PLANNING, ENGINEERING and DESIGN

              01_30.23  Constructn Contracts(s) Documnts   1.00 EA   9,868,979         0         0   9,868,979 9868979
                                                                ----------- --------- --------- -----------
                  TOTAL PLANNING, ENGINEERING and DESIGN   1.00 JOB  9,868,979         0         0   9,868,979 9868979

              01_31  CONSTRUCTION MANAGEMENT

              01_31.23  Construction Contracts                       8,625,708         0         0   8,625,708
                                                                ----------- --------- --------- -----------
                  TOTAL CONSTRUCTION MANAGEMENT            1.00 JOB  8,625,708         0         0   8,625,708 8625708
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                                                                      QUANTY UOM    CONTRACT  CONTINGN  ESCALATN  TOTAL COST    UNIT
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                  01  Project Cost

                  01_01  LANDS AND DAMAGES

                  01_01.01   REACH 7

                  01_01.01. 5  Federal                                  1.00 JOB      29,500         0         0      29,500   29500
                  01_01.01.10  Non- Federal                             1.00 JOB     481,476         0         0     481,476  481476
                  01_01.01.15  Land Value                               1.00 JOB  10,029,607         0         0  10,029,60710029607
                                                                                 ----------- --------- --------- -----------
                         TOTAL REACH 7                                  1.00 JOB  10,540,583         0         0  10,540,58310540583

                  01_01.02   REACH 8

                  01_01.02. 5  Federal                                  1.00 JOB      35,400         0         0      35,400   35400
                  01_01.02.10  Non- Federal                             1.00 JOB     481,476         0         0     481,476  481476
                  01_01.02.15  Land Value                               1.00 JOB  10,029,607         0         0  10,029,60710029607
                                                                                 ----------- --------- --------- -----------
                         TOTAL REACH 8                                  1.00 JOB  10,546,483         0         0  10,546,48310546483

                  01_01.03   REACH 9

                  01_01.03. 5  Federal                                  1.00 JOB      40,800         0         0      40,800   40800
                  01_01.03.10  Non- Federal                             1.00 JOB     772,862         0         0     772,862  772862
                  01_01.03.15  Land Value                               1.00 JOB  11,427,496         0         0  11,427,49611427496
                                                                                 ----------- --------- --------- -----------
                         TOTAL REACH 9                                  1.00 JOB  12,241,158         0         0  12,241,15812241158

                  01_01.04   REACH 10A

                  01_01.04. 5  Federal                                  1.00 JOB      15,000         0         0      15,000   15000
                  01_01.04.10  Non- Federal                             1.00 JOB     257,646         0         0     257,646  257646
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01_01.04.15	Land Value	1.00	JOB	2,133,938	0	0	2,133,938	2133938
	TOTAL REACH 10A	1.00	JOB	2,406,584	0	0	2,406,584	2406584
01_01.05	REACH 10B							
01_01.05. 5	Federal	1.00	JOB	13,000	0	0	13,000	13000
01_01.05.10	Non- Federal	1.00	JOB	257,646	0	0	257,646	257646
01_01.05.15	Land Value	1.00	JOB	2,133,938	0	0	2,133,938	2133938
	TOTAL REACH 10B	1.00	JOB	2,404,584	0	0	2,404,584	2404584
01_01.06	REACH 10C							
01_01.06. 5	Federal	1.00	JOB	9,900	0	0	9,900	9900.00
01_01.06.10	Non- Federal	1.00	JOB	257,646	0	0	257,646	257646
01_01.06.15	Land Value	1.00	JOB	2,133,938	0	0	2,133,938	2133938
	TOTAL REACH 10C	1.00	JOB	2,401,484	0	0	2,401,484	2401484
01_01.07	REACH 11							
01_01.07. 5	Federal	1.00	JOB	41,000	0	0	41,000	41000
01_01.07.10	Non- Federal	1.00	JOB	182,390	0	0	182,390	182390
01_01.07.15	Land Value	1.00	JOB	5,685,435	0	0	5,685,435	5685435
	TOTAL REACH 11	1.00	JOB	5,908,825	0	0	5,908,825	5908825
01_01.08	REACH 12							
01_01.08. 5	Federal	1.00	JOB	27,800	0	0	27,800	27800
01_01.08.10	Non- Federal	1.00	JOB	50,790	0	0	50,790	50790
01_01.08.15	Land Value	1.00	JOB	16,008,582	0	0	16,008,582	16008582
	TOTAL REACH 12	1.00	JOB	16,087,172	0	0	16,087,172	16087172

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                                          QUANTY UOM    CONTRACT  CONTINGN  ESCALATN  TOTAL COST    UNIT
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          01_01.09  CANOAS CREEK

          01_01.09. 5  Federal                     1.00 JOB      27,800         0         0      27,800   27800
          01_01.09.10  Non- Federal                1.00 JOB      50,800         0         0      50,800   50800
          01_01.09.15  Land Value                  1.00 JOB       4,000         0         0       4,000 4000.00
                                                             ----------- --------- --------- -----------
                 TOTAL CANOAS CREEK                1.00 JOB      82,600         0         0      82,600   82600

          01_01.10  ROSS CREEK

          01_01.10. 5  Federal                     1.00 JOB     105,100         0         0     105,100  105100
          01_01.10.10  Non- Federal                1.00 JOB   1,641,100         0         0   1,641,100 1641100
          01_01.10.15  Land Value                  1.00 JOB      11,000         0         0      11,000   11000
                                                             ----------- --------- --------- -----------
                 TOTAL ROSS CREEK                  1.00 JOB   1,757,200         0         0   1,757,200 1757200
          01_02  RELOCATIONS

          01_02.01  Reach 7

          01_02.01.05  Bridges and Culverts          1.00 JOB   5,687,717 1,137,543   493,466   7,318,726 7318726
          01_02.01.06  Utility Relocation/Modification 1.00 JOB   258,920    38,838    21,528     319,286  319286
          01_02.01.07  Roadway Replacement           1.00 JOB     445,092    44,509    35,398     524,999  524999
          01_02.01.10  Asphalt Conc. Paving 2" thick 1.00 JOB      86,159     8,616     6,852     101,627  101627
          01_02.01.35  Storm Drain Modifications     1.00 JOB      39,497     4,014     3,146      46,657   46657
          01_02.01.5A  Culverts (SPTC)               1.00 JOB     771,216   115,682    64,123     951,021  951021
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		QUANTY	UOM	CONTRACT	CONTINGN	ESCALATN	TOTAL COST	UNIT
01_02.01.5C	Traffic Control (Willow Bridge)	1.00	JOB	101,279	10,128	8,055	119,461	119461
01_02.01.5H	Traffic Control (Alma St.)	1.00	JOB	101,279	10,128	8,055	119,461	119461
	TOTAL Reach 7	1.00	JOB	7,491,157	1,369,459	640,622	9,501,238	9501238
01_02.02	Reach 8							
01_02.02.05	Bridges and Culverts	1.00	JOB	719,844	143,969	62,454	926,266	926266
01_02.02.06	Utility Relocation/Modification	1.00	JOB	177,082	26,562	14,723	218,367	218367
01_02.02.07	Roadway Replacement	1.00	JOB	72,960	7,296	5,802	86,058	86058
01_02.02.13	Storm Drain Modifications	1.00	JOB	26,883	2,688	2,138	31,709	31709
01_02.02.5A	Culverts (UPRR)	1.00	JOB	708,835	106,325	58,936	874,096	874096
	TOTAL Reach 8	1.00	JOB	1,705,602	286,840	144,054	2,136,496	2136496
01_02.03	Reach 9							
01_02.03.05	Bridges and Culverts	1.00	JOB	791,828	158,366	68,699	1,018,893	1018893
01_02.03.07	Roadway Replacement	1.00	JOB	265,473	26,547	21,113	313,133	313133
01_02.03.14	Asphalt Concrete paving 2" thick	1.00	JOB	117,704	11,770	9,361	138,836	138836
01_02.03.18	Storm Drain Modifications	1.00	JOB	41,171	4,117	3,274	48,562	48562
01_02.03.25	Utility Relocation	1.00	JOB	2,073,150	207,315	164,878	2,445,342	2445342
01_02.03.29	Relocate Existing Water Well	1.00	JOB	71,984	10,798	5,985	88,767	88767
01_02.03.5C	Traffic Control (Willow Glen)	1.00	JOB	150,956	15,096	12,006	178,058	178058
	TOTAL Reach 9	1.00	JOB	3,512,266	434,009	285,316	4,231,591	4231591
01_02.04	Reach 10a							
01_02.04.05	Bridges and Culverts	1.00	JOB	2,591,306	518,261	224,822	3,334,389	3334389
01_02.04.07	Roadway Replacement	1.00	JOB	121,471	12,147	9,661	143,279	143279
01_02.04.10	Asphalt Conc. Paving 2" thk ramp	1.00	JOB	33,958	3,396	2,701	40,054	40054
01_02.04.14	Storm Drain Modifications	1.00	JOB	4,070	407	324	4,800	4800.10

		QUANTY	UOM	CONTRACT	CONTINGN	ESCALATN	TOTAL COST	UNIT
01_02.04.5C	Traffic Control (Curtner)	1.00	JOB	115,176	11,518	9,160	135,854	135854
	TOTAL Reach 10a	1.00	JOB	2,865,980	545,729	246,667	3,658,375	3658375
01_02.05	Reach 10b							
01_02.06	Reach 10c							
01_02.06.06	Utility Relocation/Modification	1.00	JOB	21,595	3,239	1,796	26,630	26630
01_02.06.07	Roadway Replacement	1.00	JOB	574,247	57,425	45,670	677,341	677341
01_02.06.11	Storm Drain Modifications	1.00	JOB	43,049	4,305	3,424	50,777	50777
	TOTAL Reach 10c	1.00	JOB	638,891	64,969	50,889	754,748	754748
01_02.07	Reach 11							
01_02.07.05	Utility Relocation/Modifications	1.00	JOB	51,109	7,666	4,249	63,025	63025
01_02.07.06	Roadway Replacement	1.00	JOB	301,404	30,140	23,971	355,515	355515
01_02.07.10	Asphalt Conc. Pav'g 2"thk Rmp/Rd	1610.00	TN	83,055	8,306	6,605	97,966	60.85
01_02.07.14	Storm Drain Modifications			15,222	1,522	1,211	17,955	
	TOTAL Reach 11	1.00	JOB	450,789	47,634	36,036	534,460	534460
01_02.08	Ross Creek							
01_02.08.04	Culvert Construction	1.00	JOB	204,853	30,728	17,033	252,614	252614
01_02.08.05	Roadway Replacement	1.00	JOB	562,466	56,247	44,733	663,445	663445
01_02.08.06	Asphalt Conc. Pav'g 2"thk Rmp/Rd	600.00	TN	45,642	4,564	3,630	53,837	89.73
01_02.08.12	Storm Drain Modification			59,679	5,989	4,748	70,416	
01_02.08.5A	Culverts (Almaden/Cherry/Jarvis)	1.00	JOB	640,942	64,094	50,974	756,010	756010
01_02.08.5C	Traffic Control (Almaden)	1.00	JOB	276,615	27,661	21,999	326,275	326275
01_02.08.5D	Traffic Control (Cherry)	1.00	JOB	107,235	10,723	8,528	126,486	126486
01_02.08.5E	Traffic Control (Jarvis)	1.00	JOB	72,372	7,237	5,756	85,365	85365
	TOTAL Ross Creek	1.00	JOB	1,969,803	207,245	157,401	2,334,448	2334448

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                                                        QUANTY UOM    CONTRACT  CONTINGN  ESCALATN  TOTAL COST     UNIT
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                   01_02.09  Canoas Creek

                   01_02.09.05  Culvert Construction             1.00 JOB     156,668    23,500    13,026     193,194  193194
                   01_02.09.07  Roadway Replacement              1.00 JOB     101,350    10,135     8,060     119,545  119545
                   01_02.09.5A  Culverts (Almaden & Nightingale) 1.00 JOB     402,926    60,439    33,501     496,866  496866
                   01_02.09.5C  Traffic Control (Almaden)        1.00 JOB     276,615    27,661    21,999     326,275  326275
                   01_02.09.5H  Traffic Control (Nightingale)    1.00 JOB     107,235    10,723     8,528     126,486  126486
                                                                          ----------- --------- --------- -----------
                          TOTAL Canoas Creek                     1.00 JOB   1,044,793   132,459    85,115   1,262,367 1262367
                   01_06   FISH AND WILDLIFE FACILITIES

                   01_06. 1  MITIGATION

                   01_06. 1.01  REACH 7                          1.00 JOB     861,040   129,156    67,531   1,057,728 1057728
                   01_06. 1.02  REACH 8                          1.00 JOB     204,510    30,677    16,040     251,227  251227
                   01_06. 1.03  REACH 9                          1.00 JOB     432,904    64,936    33,953     531,793  531793
                   01_06. 1.04  REACH 10A                        1.00 JOB     279,548    41,932    21,925     343,405  343405
                   01_06. 1.05  REACH 10B                        1.00 JOB     458,536    68,780    35,963     563,279  563279
                   01_06. 1.06  REACH 10C                        1.00 JOB     507,650    76,147    39,815     623,612  623612
                   01_06. 1.07  REACH 11                         1.00 JOB     796,516   119,477    62,471     978,464  978464
                   01_06. 1.08  REACH 12                         1.00 JOB     566,467    84,970    44,428     695,865  695865
                   01_06. 1.09  ROSS CREEK                       1.00 JOB     117,710    17,656     9,232     144,598  144598
                                                                          ----------- --------- --------- -----------
                          TOTAL MITIGATION                       1.00 JOB   4,224,881   633,732   331,357   5,189,971 5189971

                   01_06. 5  MITIGATION&MONITORING PLAN (MMP)    1.00 JOB   2,700,000         0         0   2,700,000 2700000
                   01_14   RECREATION PARKS
                   01_14.01  MOB/DEMOB                           1.00 EA       40,629     4,063     3,057      47,749   47749
                                                                          ----------- --------- --------- -----------
                          TOTAL MOB/DEMOB                        1.00 EA       40,629     4,063     3,057      47,749   47749

                   01_14.02  REACH 7A

                   01_14.02.01  SPRR to Willow Street            1.00 EA       72,105     7,211     5,425      84,741   84741
                   01_14.02.02  Willow Street to Alma Street     1.00 EA      112,015    11,202     8,428     131,645  131645
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                          TOTAL REACH 7A                         1.00 EA      184,121    18,412    13,853     216,386  216386
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		QUANTY	UOM	CONTRACT	CONTINGN	ESCALATN	TOTAL COST	UNIT
01_14.03	REACH 7B and 8							
01_14.03.01	Alma St. to Willow Glenn Way	1.00	EA	289,706	28,971	21,797	340,474	340474
01_14.03.02	Willow Glenn Way to Almaden Expy	1.00	EA	208,284	20,828	15,671	244,784	244784
01_14.03.03	SB Almaden Expy Bridge to NB Br.	1.00	EA	161,280	16,128	12,135	189,542	189542
01_14.03.04	NB Almadn Xpwy Br.to SE Rch 10 B	1.00	EA	612,855	61,285	46,111	720,252	720252
	TOTAL REACH 7B and 8	1.00	EA	1,272,125	127,212	95,715	1,495,052	1495052
01_14.04	REACH 10C							
01_14.04.01	Southward on Maintenance Road	1.00	EA	28,341	2,834	2,132	33,308	33308
	TOTAL REACH 10C	1.00	EA	28,341	2,834	2,132	33,308	33308
01_14.05	REACH 11							
01_14.05.01	Capitol Expw'y to Branham Lane	1.00	EA	349,066	34,907	26,264	410,236	410236
	TOTAL REACH 11	1.00	EA	349,066	34,907	26,264	410,236	410236
01_14.06	REACH 12							
01_14.06.01	Branham Lane to Blossom HIll Rd.	1.00	EA	79,462	7,946	5,979	93,387	93387
	TOTAL REACH 12	1.00	EA	79,462	7,946	5,979	93,387	93387
01_15	FLOODWY CNTRL & DIVRSION STRUCT							
01_15.51	REACH 7: D/S SPTC TO D/S UPRR							
01_15.51.01	Bypass Channel Excavation	217800	CY	1,269,495	190,424	99,566	1,559,485	7.16
01_15.51.02	Struct. Exca. (Slo. Stab.)Gabion	1.00	JOB	240,919	36,138	18,895	295,953	295953
01_15.51.03	Structure Excavation	1.00	JOB	4,169	625	327	5,122	5121.87
01_15.51.04	Roadway Exca. (Maint/Acc. Ramp)	1.00	JOB	27,255	4,088	2,138	33,480	33480

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                                                              QUANTY UOM    CONTRACT  CONTINGN  ESCALATN  TOTAL COST     UNIT
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               01_15.51.05  Disposal of Excavated Material      1.00 JOB   3,996,358   599,454   313,434   4,909,246 4909246
               01_15.51.06  Crushed Rock (Behind gabions)       1.00 JOB     239,909    35,986    18,816     294,712  294712
               01_15.51.08  Soil Nails w/ Gabions               1.00 JOB  10,604,887 2,120,977   867,904  13,593,76813593768
               01_15.51.09  Aggregate Base 6" thick Ramp/Rd     1.00 JOB     177,646    26,647    13,933     218,226  218226
               01_15.51.11  Concrete for Misc. Structure        1.00 JOB      27,693     4,154     2,172      34,018   34018
               01_15.51.12  Reinf. Masonry Block Floodwall      1.00 JOB      63,830     9,575     5,006      78,411   78411
               01_15.51.13  Revegetated Areas - Planting        1.00 JOB      20,140     3,021     1,580      24,740   24740
               01_15.51.14  Modif. at Route 87 Abutment (NB)    1.00 JOB     168,793    25,319    13,238     207,350  207350
               01_15.51.17  Levees (Fill)                       1.00 JOB       2,184       328       171       2,682 2682.43
               01_15.51.18  Mob & Demob                         1.00 JOB     149,704    14,970    11,231     175,906  175906
               01_15.51.19  Clearing & Grubbing                22.20 AC      362,689    36,269    27,209     426,167   19197
               01_15.51.22  Shoring                             1.00 JOB     359,922    53,988    28,229     442,139  442139
               01_15.51.25  Gates for security at acc. ramp     1.00 JOB      14,660     1,466     1,100      17,226   17226
               01_15.51.26  Bollards at entrance of Acc Ramp    1.00 JOB       2,950       295       221       3,467 3466.76
               01_15.51.27  Care of Water                       1.00 JOB      41,043     6,156     3,219      50,418   50418
               01_15.51.30  Remove Commercial Sites             1.00 JOB     539,695    53,969    40,488     634,152  634152
                                                                         ----------- --------- --------- -----------
                      TOTAL REACH 7: D/S SPTC TO D/S UPRR       1.00 JOB  18,313,941 3,223,851 1,468,877  23,006,66923006669


               01_15.52   REACH 8: D/S UPRR TO D/S WILLOW

               01_15.52.01  Bypass Channel Excavation          98800 CY      575,877    86,382    45,166     707,425    7.16
               01_15.52.02  Struct. Exca. (Slo. Stab.)Gabion    1.00 JOB     101,648    15,247     7,972     124,868  124868
               01_15.52.03  Structure Excavation                1.00 JOB       5,367       805       421       6,593 6592.50
               01_15.52.04  Roadway Exca. (Maint/Acc. Ramp)     1.00 JOB       6,110       916       479       7,506 7505.69
               01_15.52.05  Disposal of Excavated Material      1.00 JOB   1,793,953   269,093   140,700   2,203,746 2203746
               01_15.52.06  Crushed Rock (Behind gabions)       1.00 JOB      50,345     7,552     3,949      61,845   61845
               01_15.52.08  Soil Nails w/ Gabions               1.00 JOB   4,413,123   882,625   361,170   5,656,917 5656917
               01_15.52.09  Aggregate Base 6" thick Ramp/Rd     1.00 JOB      45,037     6,756     3,532      55,325   55325
               01_15.52.11  Revegeted Areas - Planting          1.00 JOB       1,633       245       128       2,006 2006.24
               01_15.52.12  Bypass Chnnl Inlet Control Weir     1.00 JOB     646,314    64,631    48,486     759,432  759432
               01_15.52.14  Chain Link Fencing                736.67 LF       18,806     1,881     1,411      22,097   30.00
               01_15.52.15  Levees (Fill)                       1.00 JOB       3,057       306       229       3,592 3592.12
               01_15.52.16  Mob & Demob                         1.00 JOB     149,704    14,970    11,231     175,906  175906
               01_15.52.17  Clearing & Grubbing                 4.10 AC       64,293     6,429     4,823      75,545   18426
               01_15.52.18  Remove Residential Sites            1.00 JOB     615,276    61,528    46,158     722,961  722961
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                                                        QUANTY UOM    CONTRACT  CONTINGN  ESCALATN  TOTAL COST    UNIT
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               01_15.52.19  (E) Railroad demo/disposal       1.00 JOB     229,133    34,370    17,971     281,474  281474
               01_15.52.21  Gates for security of Acc. Ramp  1.00 JOB       2,789       279       209       3,277 3277.02
               01_15.52.22  Bollards at entrance of Acc Ramp 1.00 JOB         738        74        55         867  866.69
               01_15.52.23  Care of Water                    1.00 JOB      41,043     6,156     3,219      50,418   50418
                                                                      ----------- --------- --------- -----------
                     TOTAL REACH 8: D/S UPRR TO D/S WILLOW   1.00 JOB   8,764,245 1,460,244   697,310  10,921,79910921799

               01_15.53   REACH 9: WLLW GLN TO CURTNR AVE

               01_15.53.01  Channel Widening Excavation      1.00 JOB     594,692    89,204    46,642     730,538  730538
               01_15.53.02  Struct. Exca. (Slo. Stab.)Gabion 1.00 JOB      16,600     2,490     1,302      20,392   20392
               01_15.53.03  Struct. Exca. (Slo. Stab.)Cribw. 1.00 JOB     199,924    29,989    15,680     245,592  245592
               01_15.53.04  Roadway Exca. (Maint/Acc. Ramp)  1.00 JOB      13,657     2,049     1,071      16,777   16777
               01_15.53.05  Disposal of Excavated Material   1.00 JOB   2,110,003   316,500   165,487   2,591,990 2591990
               01_15.53.06  Structural Backfill              1.00 JOB     384,641    57,696    30,167     472,504  472504
               01_15.53.07  Crushed Rock behind gabion/Cribw 1.00 JOB     485,890    72,884    38,108     596,882  596882
               01_15.53.09  Cribwalls-Fac'g Area-Gravity typ 1.00 JOB   1,392,620   278,524   113,972   1,785,116 1785116
               01_15.53.10  Cribwalls-Fac'g Area-Stab.w/Pile 1.00 JOB     627,750   125,550    51,375     804,675  804675
               01_15.53.11  Cribwall w/Soil Nails            1.00 JOB     792,836   158,567    64,886   1,016,288 1016288
               01_15.53.12  Soil Nails w/Gabions             1.00 JOB   1,671,073   334,215   136,761   2,142,049 2142049
               01_15.53.13  Agg Base 6'thk for Ramps & Roads 1.00 JOB      59,247     8,887     4,647      72,781   72781
               01_15.53.20  Mob & Demob                      1.00 JOB     149,704    14,970    11,231     175,906  175906
               01_15.53.21  Clearing & Grubbing              1.00 JOB      34,271     3,427     2,571      40,269   40269
               01_15.53.22  Remove Residential Sites         1.00 JOB     156,364    15,636    11,730     183,731  183731
               01_15.53.23  Engineered Fill (Lev. Rd. &Ramp) 1.00 JOB      34,866     5,230     2,735      42,830   42830
               01_15.53.28  Care of Water                    1.00 JOB      41,043     6,156     3,219      50,418   50418
                                                                      ----------- --------- --------- -----------
                     TOTAL REACH 9: WLLW GLN TO CURTNR AVE   1.00 JOB   8,765,181 1,521,974   701,584  10,988,73910988739

               01_15.54   REACH 10A: CURTNR AVE-S. ALM EXP

               01_15.54.01  Channel Widening Excavation      1.00 JOB     139,027    20,854    10,904     170,784  170784
               01_15.54.02  Struct. Exca. (Slo. Stab.)Cribw. 1.00 JOB     152,116    22,817    11,930     186,864  186864
               01_15.54.03  Roadway Excavation (Ramps)       1.00 JOB       5,931       890       465       7,286 7286.42
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                                                            QUANTY UOM    CONTRACT  CONTINGN  ESCALATN  TOTAL COST    UNIT
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                 01_15.54.04  Disposal of Excavated Material    1.00 JOB     736,170   110,425    57,738     904,333  904333
                 01_15.54.05  Structural Backfill               1.00 JOB     317,933    47,690    24,935     390,558  390558
                 01_15.54.06  Crushed Rock behind gabion/cribw  1.00 JOB     325,196    48,779    25,505     399,481  399481
                 01_15.54.07  Cribwalls(Slp. Fac'g Area)Gravi.  1.00 JOB   1,308,191   261,638   107,062   1,676,892 1676892
                 01_15.54.09  Agg Base 6" thick for ramps road  1.00 JOB      28,718     4,308     2,252      35,278   35278
                 01_15.54.10  Engineered Fill (Road & RamP)     1.00 JOB      25,919     3,888     2,033      31,840   31840
                 01_15.54.15  Mob & Demob                       1.00 JOB     149,704    14,970    11,231     175,906  175906
                 01_15.54.16  Clearing & Grubbing               1.00 JOB     101,834    10,183     7,640     119,657  119657
                 01_15.54.19  Shoring for Curtner Ave Bridge    1.00 JOB      71,489    10,723     5,607      87,819   87819
                 01_15.54.20  Care of Water                     1.00 JOB      21,531     3,230     1,689      26,449   26449
                                                                        ----------- --------- --------- -----------
                        TOTAL REACH 10A: CURTNR AVE-S. ALM EXP  1.00 JOB   3,383,759   560,397   268,991   4,213,147 4213147


                 01_15.55  REACH 10B: S. ALM EXP-N. ALM EXP

                 01_15.55.01  Channel Widening EXcavation       1.00 JOB       2,145       322       168       2,635 2634.94
                 01_15.55.02  Roadway Exca. (Maint/Acc. Roads)  1.00 JOB       4,977       747       390       6,114 6114.18
                 01_15.55.03  Disposal of Excavated Material    1.00 JOB      16,847     2,527     1,321      20,695   20695
                 01_15.55.04  Agg Base 6" thk for Ramps & Road  1.00 JOB      24,077     3,612     1,888      29,577   29577
                 01_15.55.07  Mob & Demob                       1.00 JOB      58,092     5,809     4,358      68,260   68260
                 01_15.55.08  Clearing & Grubbing               1.00 JOB      70,891     7,089     5,318      83,298   83298
                 01_15.55.10  Engineered Fill (Road  & Ramp)    1.00 JOB      17,806     2,671     1,396      21,873   21873
                                                                        ----------- --------- --------- -----------
                        TOTAL REACH 10B: S. ALM EXP-N. ALM EXP  1.00 JOB     194,834    22,776    14,841     232,451  232451


                 01_15.56  REACH 10C: STREAM GAGE STA

                 01_15.56.01  Channel Widening Excavation       1.00 JOB     499,393    74,909    39,167     613,469  613469
                 01_15.56.02  Struc. Exca. (Slop.) Gab./Crib    1.00 JOB     186,650    27,997    14,639     229,286  229286
                 01_15.56.03  Roadway Exca. (Maint/Acc Ramps)   1.00 JOB       9,810     1,472       769      12,051   12051
                 01_15.56.04  Disposal of Excavation Material   1.00 JOB   1,778,447   266,767   139,484   2,184,698 2184698
                 01_15.56.05  Crushed Rock Behind gabion/crib.  1.00 JOB     381,519    57,228    29,923     468,670  468670
                 01_15.56.06  Cribwall (Facing Area) - Gravity  1.00 JOB   1,563,992   312,798   127,997   2,004,787 2004787
                 01_15.56.07  Soil Nails w/ Gabions             1.00 JOB   6,520,817 1,304,163   533,664   8,358,644 8358644
                 01_15.56.08  Agg Base 6" thk Acc Ramps & Road  1.00 JOB      47,468     7,120     3,723      58,312   58312
                 01_15.56.15  Care of Water                                   27,090     4,064     2,125      33,279
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Tue 17 Aug 2004                 Tri-Service Automated Cost Engineering System (TRACES)                 TIME 10:48:25
Eff. Date  09/01/03    PROJECT UPG11Z:   UPPER GUADALUPE RIVER FLOOD CONT - Bypass Channel Plan (100-YR
                                         UPPER GUADALUPE - Bypass Plan (100-Yr Level)                SUMMARY PAGE   12
                                            ** PROJECT OWNER SUMMARY - SUB-ELEM **

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                                                           QUANTY UOM      CONTRACT  CONTINGN  ESCALATN  TOTAL COST     UNIT
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                  01_15.56.16  Mob & Demob                                  149,704    14,970    11,231     175,906
                  01_15.56.17  Clearing & Grubbing                          199,248    19,925    14,948     234,121
                  01_15.56.18  Structurl Backfill (Gabi./Crib)     1.00 JOB  342,895    51,434    26,893     421,223  421223
                  01_15.56.19  Engineered Fill (Road & Ramp)       1.00 JOB    2,229       334       175       2,738 2737.61
                                                                          ----------- --------- --------- -----------
                       TOTAL REACH 10C: STREAM GAGE STA            1.00 JOB 11,709,263 2,143,182   944,737  14,797,18214797182


                  01_15.57  REACH 12: CHYNOWETH-BLSM HILL RD

                  01_15.57.01  Channel Widening Excavation         1.00 JOB  149,058    22,359    11,691     183,107  183107
                  01_15.57.02  Struct.Exca. for Slope-Stbl(Gbn)    1.00 JOB    4,455       668       349       5,473 5473.10
                  01_15.57.04  Roadway Exca.(Maint/Access Ramp)    1.00 JOB   15,103     2,265     1,185      18,553   18553
                  01_15.57.05  Disposal of Excavated Material      1.00 JOB  443,487    66,523    34,783     544,792  544792
                  01_15.57.06  Gabions (Sloped Facing Area)        1.00 JOB  239,985    47,997    19,640     307,623  307623
                  01_15.57.09  Agg Base 6"thk for Acc Ramp/Road    1.00 JOB   73,406    11,011     5,757      90,174   90174
                  01_15.57.10  Structural Backfill                 1.00 JOB    3,252       488       255       3,994 3994.38
                  01_15.57.15  Mob & Demob                                    82,651     8,265     6,200      97,117
                  01_15.57.16  Clearing & Grubbing                           375,017    37,502    28,134     440,653
                  01_15.57.17  Shoring for Retaining Wall                     20,232     3,035     1,587      24,854
                  01_15.57.22  Care of Water                                  21,531     3,230     1,689      26,449
                  01_15.57.23  Hydroseeding (Levees)               1.00 JOB    3,630       545       285       4,459 4459.28
                  01_15.57.25  Engineered Fill (Lev. Rd. &Ramp)    1.00 JOB 1,030,086   154,513    80,790   1,265,389 1265389
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                       TOTAL REACH 12: CHYNOWETH-BLSM HILL RD      1.00 JOB 2,461,894   358,400   192,344   3,012,638 3012638


                  01_15.58  REACH 11: CAP'TL EXP-BRANHAM LN

                  01_15.58.01  Channel Widening Excavation         1.00 JOB  730,408   109,561    57,286     897,255  897255
                  01_15.58.02  Struct.Exca. for Slope Stbl(Gbn)    1.00 JOB  105,239    15,786     8,254     129,279  129279
                  01_15.58.03  Struct.Exca.for SlopeStbl(Crbwl)    1.00 JOB   23,366     3,505     1,833      28,703   28703
                  01_15.58.04  Roadway Exca.(Maint/Access Ramp)    1.00 JOB   22,902     3,435     1,796      28,134   28134
                  01_15.58.05  Disposal of Excavated Material      1.00 JOB 2,283,217   342,483   179,073   2,804,772 2804772
                  01_15.58.07  Cribwalls (Sloped Facing Area)      1.00 JOB  375,962    75,192    30,769     481,923  481923
                  01_15.58.08  Remove Residential Sites            1.00 JOB   33,354     3,335     2,502      39,192   39192
                  01_15.58.09  Agg Base 6"thk for Acc Ramp/Road    1.00 JOB  110,853    16,628     8,694     136,175  136175
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                                                                QUANTY UOM    CONTRACT  CONTINGN  ESCALATN  TOTAL COST    UNIT
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                  01_15.58.10  Soil Nails w/ Gabions             55600 SF   6,084,508 1,216,902   497,956   7,799,365  140.28
                  01_15.58.15  Mob & Demob                        1.00 JOB     82,651     8,265     6,201      97,117   97117
                  01_15.58.16  Clearing & Grubbing               11.40 AC     163,204    16,320    12,244     191,768   16822
                  01_15.58.17  Shoring for Retaining Wall                      20,789     3,118     1,630      25,538
                  01_15.58.21  Engineered Fill (Road & Ramp)      1.00 JOB      2,865       430       225       3,520 3519.78
                  01_15.58.22  Care of Water                                   27,796     4,169     2,180      34,145
                  01_15.58.23  Structural Backfill (Gab & Crib)   1.00        112,456    16,868     8,820     138,144  138144
                  01_15.58.24  Crushed Rock Behind gabion/crib.   1.00 JOB     74,762    11,214     5,864      91,840   91840
                                                                          ----------- --------- --------- -----------
                        TOTAL REACH 11: CAP'TL EXP-BRANHAM LN     1.00 JOB 10,254,333 1,847,213   825,325  12,926,87112926871


                  01_15.59   ROSS CRK: AM EXP- JARVIS AVE

                  01_15.59.01  Channel Widening Excavation       46800 CY       8,743     1,311       686      10,740    0.23
                  01_15.59.02  Struct. Exca. (for Fld Wall etc)  16400 CY      67,702    10,155     5,310      83,167    5.07
                  01_15.59.03  Roadway Exca. (Maint/Acc Ramp)  1000.00 CY       6,865     1,030       538       8,433    8.43
                  01_15.59.04  Disposal of Excavated Material    64200 CY     291,311    43,697    22,848     357,855    5.57
                  01_15.59.05  Agg Base 6"thk for Acc Ramp/Road 1100.00 TN    125,113    18,767     9,813     153,693  139.72
                  01_15.59.07  Filter Fabric                     28550 SY     546,676    82,001    42,876     671,553   23.52
                  01_15.59.08  Concrete for Misc. Structures   1400.00 CY     351,016    52,652    27,530     431,198  308.00
                  01_15.59.09  Reinf. Masonry Block Wall(Flood)  15700 SF     152,132    22,820    11,932     186,884   11.90
                  01_15.59.10  Redwood Fencing                 9400.00 LF     150,527    15,053    11,293     176,873   18.82
                  01_15.59.11  Articulated Precast Conc.Mat 6"  253800 SF   3,713,649   557,047   291,261   4,561,958   17.97
                  01_15.59.12  Clearing and Grubbing            253800 SF      16,304     1,630     1,223      19,157    0.08
                  01_15.59.13  Mob & Demob                                    149,704    14,970    11,231     175,906
                  01_15.59.15  Traffic Control                                233,229    23,323    17,497     274,049
                  01_15.59.17  Remove Fencing                                  28,900     2,890     2,168      33,958
                  01_15.59.18  Care of Water                                   27,796     4,169     2,180      34,145
                  01_15.59.19  New Culvert - Ranwick Ct                        19,379     1,938     1,454      22,770
                  01_15.59.20  New Culvert - Briarglen Drive                   26,115     2,611     1,959      30,686
                                                                          ----------- --------- --------- -----------
                        TOTAL ROSS CRK: AM EXP- JARVIS AVE        1.00 JOB  5,915,161   856,066   461,798   7,233,025 7233025


                  01_15.60   CANOAS CRK: U/S ALM-115' NIGHT'

                  01_15.60.01  Conc. 4 Misc.Struct. Floodwl ftg 760.00 CY     171,801    25,770    13,474     211,046  277.69
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01_15.60.02	Reinf. Masonry Block Wall(Flood)	15260	SF	120,585	18,088	9,457	148,130	9.71
01_15.60.03	Redwood Fencing	2550.00	LF	46,465	4,647	3,486	54,598	21.41
01_15.60.04	Mob & Demob			82,651	8,265	6,201	97,117	
01_15.60.06	Traffic control			16,712	1,671	1,254	19,637	
01_15.60.07	Clearing and Grubbing			19,338	1,934	1,451	22,723	
01_15.60.10	New Culvert - Nightingale Drive			58,896	5,890	4,418	69,204	
	TOTAL CANOAS CRK: U/S ALM-115' NIGHT'	1.00	JOB	516,449	66,264	39,741	622,454	622454
01_15.99	ASSOCIATED GENERAL ITEMS							
01_15.99.01	Construction Overhead			5,652,935	565,294	424,083	6,642,312	
	TOTAL ASSOCIATED GENERAL ITEMS	1.00	JOB	5,652,935	565,294	424,083	6,642,312	6642312
01_30	PLANNING, ENGINEERING and DESIGN							
01_30.23	Constructn Contracts(s) Documnts							
01_30.23.01	Plans and Specifications (P&S)	1.00	EA	3,197,000	0	0	3,197,000	3197000
01_30.23.02	Plan Formulation/Economics	1.00	EA	25,000	0	0	25,000	25000
01_30.23.03	PPMD	1.00	EA	2,190,000	0	0	2,190,000	2190000
01_30.23.04	Environmental Studies Documents	1.00	EA	2,030,000	0	0	2,030,000	2030000
01_30.23.07	Cost Estimates	1.00	EA	490,000	0	0	490,000	490000
01_30.23.08	Other_Studies/Investigations	1.00	EA	35,000	0	0	35,000	35000
01_30.23.09	Contract Award Documents	1.00	EA	260,000	0	0	260,000	260000
01_30.23.99	Associated Constr Docs	1.00	EA	1,641,979	0	0	1,641,979	1641979
	TOTAL Constructn Contracts(s) Documnts	1.00	EA	9,868,979	0	0	9,868,979	9868979
01_31	CONSTRUCTION MANAGEMENT							
01_31.23	Construction Contracts							
01_31.23.11	Supervision and Administration			8,625,708	0	0	8,625,708	
	TOTAL Construction Contracts			8,625,708	0	0	8,625,708	

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                                            ** PROJECT INDIRECT SUMMARY - FEATURE **

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                                                              QUANTY UOM      DIRECT   HOME OH    PROFIT      BOND  TOTAL COST     UNIT
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        01  Project Cost                                        1.00 JOB 174,419,313 3,553,918 7,392,150 1,995,880 187,361,261********
                                                                         ----------- --------- --------- --------- -----------
      TOTAL UPPER GUADALUPE RIVER FLOOD CONT                    1.00 EA  174,419,313 3,553,918 7,392,150 1,995,880 187,361,261********

          Contingency          Variable                         8.83 %                                              16,543,110
                                                                                                                   -----------
            SUBTOTAL                                                                                               203,904,371
          Escalation        Variable                            4.00 %                                               8,164,088
                                                                                                                   -----------
            TOTAL INCL OWNER COSTS                                                                                 212,068,459
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                                                      QUANTY UOM      LABOR  EQUIPMNT  MATERIAL      OTHER  TOTAL COST    UNIT
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          01  Project Cost                              1.00 JOB  43216914 7,685,753  30486801   93029844 174,419,313********
                                                                  --------- --------- ---------  --------- -----------
      TOTAL UPPER GUADALUPE RIVER FLOOD CONT            1.00 EA   43216914 7,685,753  30486801   93029844 174,419,313********

        Pr Contractors Home OH      4%                  2.04 %                                              3,553,918
                                                                                                          -----------
          SUBTOTAL                                                                                        177,973,231
        Pr Contractors Profit            8%             4.15 %                                              7,392,150
                                                                                                          -----------
          SUBTOTAL                                                                                        185,365,380
        Pr Contractors Bond         2%                  1.08 %                                              1,995,880
                                                                                                          -----------
          TOTAL INCL INDIRECTS                                                                            187,361,261
        Contingency           Variable                  8.83 %                                             16,543,110
                                                                                                          -----------
          SUBTOTAL                                                                                        203,904,371
        Escalation         Variable                     4.00 %                                              8,164,088
                                                                                                          -----------
          TOTAL INCL OWNER COSTS                                                                          212,068,459
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                                              ** PROJECT DIRECT SUMMARY - BID ITEM **

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                                                      QUANTY UOM     LABOR  EQUIPMNT  MATERIAL     OTHER  TOTAL COST     UNIT
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          01  Project Cost

          01_01  LANDS AND DAMAGES                      1.00 JOB         0         0         0  64376673  64,376,67364376673
          01_02  RELOCATIONS                            1.00 JOB 7,063,241   617,745 5,906,719 3,589,480  17,177,18417177184
          01_06  FISH AND WILDLIFE FACILITIES           1.00 JOB 1,866,935   363,702 1,457,078 2,700,000   6,387,714 6387714
          01_14  RECREATION PARKS                       1.00 JOB   308,450    70,995   413,900   911,991   1,705,337 1705337
          01_15  FLOODWY CNTRL & DIVRSION STRUCT        1.00 JOB  18965580 6,633,312  22709104  17969721  66,277,71766277717
          01_30  PLANNING, ENGINEERING and DESIGN       1.00 JOB 6,387,000         0         0 3,481,979   9,868,979 9868979
          01_31  CONSTRUCTION MANAGEMENT                1.00 JOB 8,625,708         0         0         0   8,625,708 8625708
                                                                 --------- --------- --------- --------- -----------
           TOTAL Project Cost                           1.00 JOB  43216914 7,685,753  30486801  93029844 174,419,313********

             Pr Contractors Home OH      4%             2.04 %                                             3,553,918
                                                                                                         -----------
               SUBTOTAL                                                                                  177,973,231
             Pr Contractors Profit            8%        4.15 %                                             7,392,150
                                                                                                         -----------
               SUBTOTAL                                                                                  185,365,380
             Pr Contractors Bond         2%             1.08 %                                             1,995,880
                                                                                                         -----------
               TOTAL INCL INDIRECTS                                                                      187,361,261
             Contingency          Variable              8.83 %                                            16,543,110
                                                                                                         -----------
               SUBTOTAL                                                                                  203,904,371
             Escalation         Variable                4.00 %                                             8,164,088
                                                                                                         -----------
               TOTAL INCL OWNER COSTS                                                                    212,068,459
```

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Thu 18 Dec    3
Eff. Date  09/01/03                Tri-Service Automated Cost Engineering System (TRACES)
                       PROJECT UPGV7R:   UPPER GUADALUPE RIVER FLOOD CONT - Valley View Plan (50-YR Level)     TIME 07:29:4
                                        UPPER GUADALUPE -  Valley View Plan (50Yr Level)
                                              ** PROJECT OWNER SUMMARY - FEATURE **                            SUMMARY PAGE
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                                                                  QUANTY UOM    CONTRACT  CONTINGN  ESCALATN  TOTAL COST    UNI
------------------------------------------------------------------------------------------------------------------------------
                    1  Project Cost
                                                                    1.00 JOB 144,882,435  13849633 6,818,871 165,550,939********
                 TOTAL UPPER GUADALUPE RIVER FLOOD CONT                      -----------  --------- --------- -----------
                                                                    1.00 EA  144,882,435  13849633 6,818,871 165,550,939********
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Thu 18 Dec 2003                   Tri-Service Automated Cost Engineering System (TRACES)
Eff. Date  09/01/03   PROJECT UPGV7R:   UPPER GUADALUPE RIVER FLOOD CONT - Valley View Plan (50-YR Level)   TIME 07:29:4
                                      UPPER GUADALUPE -  Valley View Plan (50Yr Level)
                                          ** PROJECT OWNER SUMMARY - BID ITEM **                             SUMMARY PAGE

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                                                          QUANTY UOM    CONTRACT  CONTINGN  ESCALATN  TOTAL COST    UNI
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                    1  Project Cost

                    1_01  LANDS AND DAMAGES                 1.00 JOB  36,834,201         0         0  36,834,2013683420
                    1_02  RELOCATION/BRIDG/PAV'G   100%     1.00 JOB  18,572,520 2,891,147 1,551,823  23,015,48923015548
                    1_06  FISH AND WILDLIFE FACILITIES      1.00 JOB   6,500,043   525,006   274,508   7,299,557 729955
                    1_15  FLDWAY CNTL &DVSION STRUT 100%    1.00 JOB  62,762,375  10433480 4,992,540  78,188,3967818839
                    1_30  PLANNING, ENGINEERING and DESIGN  1.00 JOB  11,571,388         0         0  11,571,3881157138
                    1_31  CONSTRUCTION MANAGEMENT           1.00 JOB   8,641,908         0         0   8,641,908 864190
                                                                     ----------- --------- --------- -----------
                   TOTAL Project Cost                       1.00 JOB 144,882,435  13849633 6,818,871 165,550,939*******
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Thu 18 Dec 20                          Tri-Service Automated Cost Engineering System (TRACES)
Eff. Date  09/01/03   PROJECT UPGV7R:   UPPER GUADALUPE RIVER FLOOD CONT - Valley View Plan (50-YR Level)   TIME 07:29:4
                                        UPPER GUADALUPE -  Valley View Plan (50Yr Level)
                                            ** PROJECT OWNER SUMMARY - ELEMENT **                          SUMMARY PAGE

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                                                       QUANTY UOM    CONTRACT  CONTINGN  ESCALATN  TOTAL COST    UNI
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               1  Project Cost

               1_01  LANDS AND DAMAGES

               1_01.01  REACH 7                          1.00 JOB  10,527,257         0         0  10,527,25710527257
               1_01.02  REACH 8                          1.00 JOB  10,533,157         0         0  10,533,15710533157
               1_01.03  REACH 9                          1.00 JOB   4,591,261         0         0   4,591,261 4591261
               1_01.04  REACH 10A                        1.00 JOB   1,531,830         0         0   1,531,830 1531830
               1_01.05  REACH 10B                        1.00 JOB   1,529,830         0         0   1,529,830 1529830
               1_01.06  REACH 10C                        1.00 JOB   1,528,230         0         0   1,528,230 1528230
               1_01.07  REACH 11                         1.00 JOB   4,738,363         0         0   4,738,363 4738363
               1_01.09  CANOAS CREEK                     1.00 JOB      82,600         0         0      82,600   82600
               1_01.10  ROSS CREEK                       1.00 JOB   1,771,673         0         0   1,771,673 1771673
                                                                  ----------- --------- --------- -----------
                  TOTAL LANDS AND DAMAGES                1.00 JOB  36,834,201         0         0  36,834,20136834201

               1_02  RELOCATION/BRIDG/PAV'G   100%

               1_02.01  Reach 7                          1.00 JOB   7,535,592 1,335,277   641,364   9,512,233 9512233
               1_02.02  Reach 8                          1.00 JOB   1,545,475   226,532   128,116   1,900,123 1900123
               1_02.03  Reach 9                          1.00 JOB   3,033,851   382,568   247,007   3,663,426 3663426
               1_02.04  Reach 10a                        1.00 JOB   2,872,200   546,351   247,161   3,665,711 3665711
               1_02.06  Reach 10c                        1.00 JOB     161,394    17,219    12,914     191,527  191527
               1_02.07  Reach 11                         1.00 JOB     434,958    46,051    34,777     515,786  515786
               1_02.08  Ross Creek                       1.00 JOB   1,959,127   206,177   156,551   2,321,855 2321855
               1_02.09  Canoas Creek                     1.00 JOB   1,029,924   130,972    83,933   1,244,828 1244828
                                                                  ----------- --------- --------- -----------
                  TOTAL RELOCATION/BRIDG/PAV'G   100%    1.00 JOB  18,572,520 2,891,147 1,551,823  23,015,48923015489

               1_06  FISH AND WILDLIFE FACILITIES

               1_06. 1  MITIGATION                       1.00 JOB   3,500,043   525,006   274,508   4,299,557 4299557
               1_06. 5  MONITOR & MITIGATION PLAN (MMP)  1.00 JOB   3,000,000         0         0   3,000,000 3000000
                                                                  ----------- --------- --------- -----------
                  TOTAL FISH AND WILDLIFE FACILITIES     1.00 JOB   6,500,043   525,006   274,508   7,299,557 7299557
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1_15. 1	REACH 7: D/S SPTC TO D/S UPRR	1.00	JOB	18,313,503	3,223,795	1,468,844	23,006,142	23006142
1_15. 2	REACH 8: D/S UPRR TO D/S WILLOW	1.00	JOB	8,703,933	1,453,452	692,734	10,850,119	10850119
1_15. 3	REACH 9: WLLW GLN TO CURTNR AVE	1.00	JOB	8,194,375	1,401,917	655,049	10,251,342	10251342
1_15. 4	REACH 10A: CURTNR AVE-S. ALM EXP	1.00	JOB	2,686,894	448,490	213,833	3,349,217	3349217
1_15. 5	REACH 10B: S. ALM EXP-N. ALM EXP	1.00	JOB	198,816	23,373	15,153	237,342	237342
1_15. 6	REACH 10C: STREAM GAGE STA	1.00	JOB	8,313,148	1,574,882	674,364	10,562,394	10562394
1_15.21	REACH 11: CAP'TL EXP-BRANHAM LN	1.00	JOB	4,660,438	874,738	377,499	5,912,675	5912675
1_15.22	ROSS CRK: AM EXP- JARVIS AVE	1.00	JOB	5,387,130	779,384	420,556	6,587,071	6587071
1_15.23	CANOAS CRK: U/S ALM-115' NIGHT'	1.00	JOB	620,268	85,063	48,104	753,436	753436

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                                                                  QUANTY UOM    CONTRACT  CONTINGN  ESCALATN  TOTAL COST    UNIT
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                    1_15.99  ASSOCIATED GENERAL ITEMS              1.00 JOB   5,683,868   568,387   426,404   6,678,659 6678659
                                                                              ----------- --------- --------- -----------
                       TOTAL FLDWAY CNTL &DVSION STRUT 100%        1.00 JOB  62,762,375  10433480 4,992,540  78,188,39678188396

                    1_30  PLANNING, ENGINEERING and DESIGN

                    1_30.23  Constructn Contracts(s) Documnts      1.00 EA   11,571,388         0         0  11,571,38811571388
                                                                             ----------- --------- --------- -----------
                       TOTAL PLANNING, ENGINEERING and DESIGN      1.00 JOB  11,571,388         0         0  11,571,38811571388

                    1_31  CONSTRUCTION MANAGEMENT

                    1_31.23  Construction Contracts                           8,641,908         0         0   8,641,908
                                                                             ----------- --------- --------- -----------
                       TOTAL CONSTRUCTION MANAGEMENT               1.00 JOB   8,641,908         0         0   8,641,908 8641908
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Tri-Service Automated Cost Engineering System (TRACES)
PROJECT UPGV7R: UPPER GUADALUPE RIVER FLOOD CONT - Valley View Plan (50-YR Level)
UPPER GUADALUPE - Valley View Plan (50Yr Level)
** PROJECT OWNER SUMMARY - ELEMENT **

		QUANTY	UOM	CONTRACT	CONTINGN	ESCALATN	TOTAL COST	UNIT
1	Project Cost							
1_01	LANDS AND DAMAGES							
1_01.01	REACH 7	1.00	JOB	10,527,257	0	0	10,527,257	10527257
1_01.02	REACH 8	1.00	JOB	10,533,157	0	0	10,533,157	10533157
1_01.03	REACH 9	1.00	JOB	4,591,261	0	0	4,591,261	4591261
1_01.04	REACH 10A	1.00	JOB	1,531,830	0	0	1,531,830	1531830
1_01.05	REACH 10B	1.00	JOB	1,529,830	0	0	1,529,830	1529830
1_01.06	REACH 10C	1.00	JOB	1,528,230	0	0	1,528,230	1528230
1_01.07	REACH 11	1.00	JOB	4,738,363	0	0	4,738,363	4738363
1_01.09	CANOAS CREEK	1.00	JOB	82,600	0	0	82,600	82600
1_01.10	ROSS CREEK	1.00	JOB	1,771,673	0	0	1,771,673	1771673
	TOTAL LANDS AND DAMAGES	1.00	JOB	36,834,201	0	0	36,834,201	36834201
1_02	RELOCATION/BRIDG/PAV'G 100%							
1_02.01	Reach 7	1.00	JOB	7,535,592	1,335,277	641,364	9,512,233	9512233
1_02.02	Reach 8	1.00	JOB	1,545,475	226,532	128,116	1,900,123	1900123
1_02.03	Reach 9	1.00	JOB	3,033,851	382,568	247,007	3,663,426	3663426
1_02.04	Reach 10a	1.00	JOB	2,872,200	546,351	247,161	3,665,711	3665711
1_02.06	Reach 10c	1.00	JOB	161,394	17,219	12,914	191,527	191527
1_02.07	Reach 11	1.00	JOB	434,958	46,051	34,777	515,786	515786
1_02.08	Ross Creek	1.00	JOB	1,959,127	206,177	156,551	2,321,855	2321855
1_02.09	Canoas Creek	1.00	JOB	1,029,924	130,972	83,933	1,244,828	1244828
	TOTAL RELOCATION/BRIDG/PAV'G 100%	1.00	JOB	18,572,520	2,891,147	1,551,823	23,015,489	23015489
1_06	FISH AND WILDLIFE FACILITIES							
1_06. 1	MITIGATION	1.00	JOB	3,500,043	525,006	274,508	4,299,557	4299557
1_06. 5	MONITOR & MITIGATION PLAN (MMP)	1.00	JOB	3,000,000	0	0	3,000,000	3000000
	TOTAL FISH AND WILDLIFE FACILITIES	1.00	JOB	6,500,043	525,006	274,508	7,299,557	7299557

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 _1  [illegible] 100%

1_15. 1  REACH 7: D/S SPTC TO D/S UPRR          1.00 JOB 18,313,503 3,223,795 1,468,844  23,006,14223006142
1_15. 2  REACH 8: D/S UPRR TO D/S WILLOW        1.00 JOB  8,703,933 1,453,452   692,734  10,850,11910850119
1_15. 3  REACH 9: WLLW GLN TO CURTNR AVE        1.00 JOB  8,194,375 1,401,917   655,049  10,251,34210251342
1_15. 4  REACH 10A: CURTNR AVE-S. ALM EXP       1.00 JOB  2,686,894   448,490   213,833   3,349,217 3349217
1_15. 5  REACH 10B: S. ALM EXP-N. ALM EXP       1.00 JOB    198,816    23,373    15,153     237,342  237342
1_15. 6  REACH 10C: STREAM GAGE STA             1.00 JOB  8,313,148 1,574,882   674,364  10,562,39410562394
1_15.21  REACH 11: CAP'TL EXP-BRANHAM LN        1.00 JOB  4,660,438   874,738   377,499   5,912,675 5912675
1_15.22  ROSS CRK: AM EXP- JARVIS AVE           1.00 JOB  5,387,130   779,384   420,556   6,587,071 6587071
1_15.23  CANOAS CRK: U/S ALM-115' NIGHT'        1.00 JOB    620,268    85,063    48,104     753,436  753436
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	QUANTY	UOM	CONTRACT	CONTINGN	ESCALATN	TOTAL COST	UNIT
1_15.99 ASSOCIATED GENERAL ITEMS	1.00	JOB	5,683,868	568,387	426,404	6,678,659	6678659
TOTAL FLDWAY CNTL &DVSION STRUT 100%	1.00	JOB	62,762,375	10433480	4,992,540	78,188,396	78188396
1_30 PLANNING, ENGINEERING and DESIGN							
1_30.23 Constructn Contracts(s) Documnts	1.00	EA	11,571,388	0	0	11,571,388	11571388
TOTAL PLANNING, ENGINEERING and DESIGN	1.00	JOB	11,571,388	0	0	11,571,388	11571388
1_31 CONSTRUCTION MANAGEMENT							
1_31.23 Construction Contracts			8,641,908	0	0	8,641,908	
TOTAL CONSTRUCTION MANAGEMENT	1.00	JOB	8,641,908	0	0	8,641,908	8641908

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                                                              QUANTY UOM    CONTRACT  CONTINGN  ESCALATN  TOTAL COST     UNIT
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                  1  Project Cost

                  1_01  LANDS AND DAMAGES

                  1_01.01  REACH 7

                  1_01.01. 5  Federal                           1.00 JOB      29,500         0         0      29,500    29500
                  1_01.01.10  Non- Federal                      1.00 JOB     481,476         0         0     481,476   481476
                  1_01.01.15  Land Value                        1.00 JOB  10,016,281         0         0  10,016,28110016281
                                                                          ----------  --------  --------  ----------
                       TOTAL REACH 7                            1.00 JOB  10,527,257         0         0  10,527,25710527257

                  1_01.02  REACH 8

                  1_01.02. 5  Federal                           1.00 JOB      35,400         0         0      35,400    35400
                  1_01.02.10  Non- Federal                      1.00 JOB     481,476         0         0     481,476   481476
                  1_01.02.15  Land Value                        1.00 JOB  10,016,281         0         0  10,016,28110016281
                                                                          ----------  --------  --------  ----------
                       TOTAL REACH 8                            1.00 JOB  10,533,157         0         0  10,533,15710533157

                  1_01.03  REACH 9

                  1_01.03. 5  Federal                           1.00 JOB      40,800         0         0      40,800    40800
                  1_01.03.10  Non- Federal                      1.00 JOB     772,908         0         0     772,908   772908
                  1_01.03.15  Land Value                        1.00 JOB   3,777,553         0         0   3,777,553  3777553
                                                                          ----------  --------  --------  ----------
                       TOTAL REACH 9                            1.00 JOB   4,591,261         0         0   4,591,261  4591261

                  1_01.04  REACH 10A

                  1_01.04. 5  Federal                           1.00 JOB      15,000         0         0      15,000    15000
                  1_01.04.10  Non- Federal                      1.00 JOB     257,646         0         0     257,646   257646
                  1_01.04.15  Land Value                        1.00 JOB   1,259,184         0         0   1,259,184  1259184
                                                                          ----------  --------  --------  ----------
                       TOTAL REACH 10A                          1.00 JOB   1,531,830         0         0   1,531,830  1531830
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1_01.05 REACH 10B

1_01.05. 5	Federal	1.00	JOB	13,000	0	0	13,000	13000
1_01.05.10	Non- Federal	1.00	JOB	257,646	0	0	257,646	257646
1_01.05.15	Land Value	1.00	JOB	1,259,184	0	0	1,259,184	1259184
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	TOTAL REACH 10B	1.00	JOB	1,529,830	0	0	1,529,830	1529830

1_01.06 REACH 10C

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                                                 QUANTY UOM    CONTRACT  CONTINGN  ESCALATN  TOTAL COST      UNIT
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             1_01.06. 5  Federal                   1.00 JOB      11,400         0         0      11,400     11400
             1_01.06.10  Non- Federal              1.00 JOB     257,646         0         0     257,646    257646
             1_01.06.15  Land Value                1.00 JOB   1,259,184         0         0   1,259,184   1259184
                                                              ----------  --------  --------  ----------
                 TOTAL REACH 10C                   1.00 JOB   1,528,230         0         0   1,528,230   1528230

             1_01.07  REACH 11

             1_01.07. 5  Federal                   1.00 JOB      41,700         0         0      41,700     41700
             1_01.07.10  Non- Federal              1.00 JOB     820,318         0         0     820,318    820318
             1_01.07.15  Land Value                1.00 JOB   3,876,345         0         0   3,876,345   3876345
                                                              ----------  --------  --------  ----------
                 TOTAL REACH 11                    1.00 JOB   4,738,363         0         0   4,738,363   4738363

             1_01.09  CANOAS CREEK

             1_01.09. 5  Federal                   1.00 JOB      27,800         0         0      27,800     27800
             1_01.09.10  Non- Federal              1.00 JOB      50,800         0         0      50,800     50800
             1_01.09.15  Land Value                1.00 JOB       4,000         0         0       4,000   4000.00
                                                              ----------  --------  --------  ----------
                 TOTAL CANOAS CREEK                1.00 JOB      82,600         0         0      82,600     82600

             1_01.10  ROSS CREEK

             1_01.10. 5  Federal                   1.00 JOB     106,100         0         0     106,100    106100
             1_01.10.10  Non- Federal              1.00 JOB   1,641,049         0         0   1,641,049   1641049
             1_01.10.15  Land Value                1.00 JOB      24,524         0         0      24,524     24524
                                                              ----------  --------  --------  ----------
                 TOTAL ROSS CREEK                  1.00 JOB   1,771,673         0         0   1,771,673   1771673
             1_02   RELOCATION/BRIDG/PAV'G   100%

             1_02.01  Reach 7

             1_02.01.05  Bridges and Culverts      1.00 JOB   5,687,717 1,137,543   493,466   7,318,726   7318726
             1_02.01.06  Utility Relocation/Modification
                                                   1.00 JOB     258,920    38,838    21,528     319,286    319286
             1_02.01.07  Roadway Replacement       1.00 JOB     461,920    46,192    36,736     544,848    544848
             1_02.01.10  Asphalt Conc. Paving 2" thick
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[illegible]	Storm Drain Modifications	1.00	JOB	39,497	3,950	3,141	[illegible]87	46587
1_02.01.5A	Culverts (SPTC)	1.00	JOB	771,216	77,122	61,335	90[illegible]72	909672
1_02.01.5C	Traffic Control (Willow Bridge)	1.00	JOB	115,176	11,518	9,160	135,854	135854
1_02.01.5H	Traffic Control (Alma St.)	1.00	JOB	115,176	11,518	9,160	135,854	135854
	TOTAL Reach 7	1.00	JOB	7,535,592	1,335,277	641,364	9,512,233	9512233
1_02.02	Reach 8							
1_02.02.05	Bridges and Culverts	1.00	JOB	719,844	143,969	62,454	926,266	926266

		QUANTY	UOM	CONTRACT	CONTINGN	ESCALATN	TOTAL COST	UNIT
1_02.02.06	Utility Relocation/Modification	1.00	JOB	177,082	17,708	14,083	208,873	208873
1_02.02.07	Roadway Replacement	1.00	JOB	57,707	5,771	4,589	68,067	68067
1_02.02.13	Storm Drain Modifications	1.00	JOB	26,772	2,677	2,129	31,578	31578
1_02.02.5A	Culverts (UPRR)	1.00	JOB	564,072	56,407	44,861	665,339	665339
	TOTAL Reach 8	1.00	JOB	1,545,475	226,532	128,116	1,900,123	1900123
1_02.03	Reach 9							
1_02.03.05	Bridges and Culverts	1.00	JOB	791,828	158,366	68,699	1,018,893	1018893
1_02.03.07	Roadway Replacement (Willow Glen	1.00	JOB	265,473	26,547	21,113	313,133	313133
1_02.03.14	Asphalt Concrete paving 2" thick	1.00	JOB	81,279	8,128	6,464	95,871	95871
1_02.03.18	Storm Drain Modifications	1.00	JOB	22,574	2,257	1,795	26,626	26626
1_02.03.25	Utility Relocation	1.00	JOB	1,649,756	164,976	131,205	1,945,937	1945937
1_02.03.29	Relocate Existing Water Well	1.00	JOB	71,984	7,198	5,725	84,908	84908
1_02.03.5C	Traffic Control (Willow Glen)	1.00	JOB	150,956	15,096	12,006	178,058	178058
	TOTAL Reach 9	1.00	JOB	3,033,851	382,568	247,007	3,663,426	3663426
1_02.04	Reach 10a							
1_02.04.05	Bridges and Culverts	1.00	JOB	2,591,306	518,261	224,822	3,334,389	3334389
1_02.04.06	Utility Relocation/Modification	1.00	JOB	12,957	1,296	1,030	15,283	15283
1_02.04.07	Roadway Replacement	1.00	JOB	120,629	12,063	9,594	142,285	142285
1_02.04.10	Asphalt Conc. Paving 2" thk ramp	1.00	JOB	28,062	2,806	2,232	33,100	33100
1_02.04.14	Storm Drain Modifications	1.00	JOB	4,070	407	324	4,800	4800.10
1_02.04.5C	Traffic Control (Curtner)	1.00	JOB	115,176	11,518	9,160	135,854	135854
	TOTAL Reach 10a	1.00	JOB	2,872,200	546,351	247,161	3,665,711	3665711
1_02.05	Reach 10b							
1_02.06	Reach 10c							
1_02.06.06	Utility Relocation/Modification	1.00	JOB	21,595	3,239	1,796	26,630	26630
1_02.06.07	Roadway Replacement	1.00	JOB	139,798	13,980	11,118	164,896	164896

	TOTAL Reach 10C	1.00	JOB	161,394	17,219	12,914	1 527	191527
1_02.07	Reach 11							
1_02.07.05	Utility Relocation/Modifications	1.00	JOB	51,109	7,666	4,249	63,025	63025
1_02.07.06	Roadway Replacement	1.00	JOB	300,086	30,009	23,866	353,961	353961
1_02.07.10	Asphalt Conc. Pav'g 2"thk Rmp/Rd	1610.00	TN	68,541	6,854	5,451	80,846	50.21
1_02.07.14	Storm Drain Modifications			15,222	1,522	1,211	17,955	
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	TOTAL Reach 11	1.00	JOB	434,958	46,051	34,777	515,786	515786

		QUANTY	UOM	CONTRACT	CONTINGN	ESCALATN	TOTAL COST	UNIT
1_02.08	Ross Creek							
1_02.08.04	Culvert Construction	1.00	JOB	204,853	30,728	17,033	252,614	252614
1_02.08.05	Roadway Replacement	1.00	JOB	559,765	55,977	44,518	660,260	660260
1_02.08.06	Asphalt Conc. Pav'g 2"thk Rmp/Rd	600.00	TN	37,666	3,767	2,996	44,428	74.05
1_02.08.12	Storm Drain Modification			59,679	5,989	4,748	70,416	
1_02.08.5A	Culverts (Almaden/Cherry/Jarvis)	1.00	JOB	640,942	64,094	50,974	756,010	756010
1_02.08.5C	Traffic Control (Almaden)	1.00	JOB	276,615	27,661	21,999	326,275	326275
1_02.08.5D	Traffic Control (Cherry)	1.00	JOB	107,235	10,723	8,528	126,486	126486
1_02.08.5E	Traffic Control (Jarvis)	1.00	JOB	72,372	7,237	5,756	85,365	85365
	TOTAL Ross Creek	1.00	JOB	1,959,127	206,177	156,551	2,321,855	2321855
1_02.09	Canoas Creek							
1_02.09.05	Culvert Construction	1.00	JOB	156,668	23,500	13,026	193,194	193194
1_02.09.07	Roadway Replacement	1.00	JOB	74,091	7,409	5,892	87,392	87392
1_02.09.5A	Culverts (Almaden & Nightingale)	1.00	JOB	402,926	60,439	33,501	496,866	496866
1_02.09.5C	Traffic Control (Almaden)	1.00	JOB	276,615	27,661	21,999	326,275	326275
1_02.09.5H	Traffic Control	1.00	JOB	119,624	11,962	9,514	141,101	141101
	TOTAL Canoas Creek	1.00	JOB	1,029,924	130,972	83,933	1,244,828	1244828
1_06	FISH AND WILDLIFE FACILITIES							
1_06. 1	MITIGATION							
1_06. 1.01	REACH 7	1.00	JOB	861,040	129,156	67,531	1,057,728	1057728
1_06. 1.02	REACH 8	1.00	JOB	200,024	30,004	15,688	245,716	245716
1_06. 1.03	REACH 9	1.00	JOB	562,722	84,408	44,134	691,265	691265
1_06. 1.04	REACH 10A	1.00	JOB	256,584	38,488	20,124	315,195	315195
1_06. 1.05	REACH 10B	1.00	JOB	485,689	72,853	38,093	596,635	596635
1_06. 1.06	REACH 10C	1.00	JOB	417,384	62,608	32,735	512,727	512727
1_06. 1.07	REACH 11	1.00	JOB	600,103	90,015	47,066	737,184	737184
1_06. 1.08	ROSS CREEK	1.00	JOB	116,496	17,474	9,137	143,108	143108
	TOTAL MITIGATION	1.00	JOB	3,500,043	525,006	274,508	4,299,557	4299557
1_06. 5	MONITOR & MITIGATION PLAN (MMP)	1.00	JOB	3,000,000	0	0		
1_15	FLDWAY CNTL &DVSION STRUT 100%							

1_15. 1 REACH 7: D/S SPTC TO D/S UPRR

1_15. 1.01	Bypass Channel Excavation	217800	CY	1,269,495	190,424	99,566	1,559,485	7.16
1_15. 1.02	Struct. Exca. (Slo. Stab.)Gabion	1.00	JOB	240,919	36,138	18,895	295,953	295953
1_15. 1.03	Structure Excavation	1.00	JOB	4,169	625	327	5,122	5121.87
1_15. 1.04	Roadway Exca. (Maint/Acc. Ramp)	1.00	JOB	27,255	4,088	2,138	33,480	33480
1_15. 1.05	Disposal of Excavated Material	1.00	JOB	3,996,358	599,454	313,434	4,909,246	4909246
1_15. 1.06	Crushed Rock (Behind gabions)	1.00	JOB	239,909	35,986	18,816	294,712	294712
1_15. 1.08	Soil Nails w/ Gabions	1.00	JOB	10,605,083	2,121,017	867,920	13,594,019	13594019
1_15. 1.09	Aggregate Base 6" thick Ramp/Rd	1.00	JOB	177,646	26,647	13,933	218,226	218226

		QUANTY	UOM	CONTRACT	CONTINGN	ESCALATN	TOTAL COST	UNIT
1_15. 1.11	Concrete for Misc. Structure	1.00	JOB	27,256	4,088	2,138	33,483	33483
1_15. 1.12	Reinf. Masonry Block Floodwall	1.00	JOB	63,830	9,575	5,006	78,411	78411
1_15. 1.13	Revegetated Areas - Planting	1.00	JOB	20,140	3,021	1,580	24,740	24740
1_15. 1.14	Modif. at Route 87 Abutment (NB)	1.00	JOB	168,596	25,289	13,223	207,108	207108
1_15. 1.17	Levees (Fill)	1.00	JOB	2,184	328	171	2,682	2682.43
1_15. 1.18	Mob & Demob	1.00	JOB	149,704	14,970	11,231	175,906	175906
1_15. 1.19	Clearing & Grubbing	1.00	JOB	362,689	36,269	27,209	426,167	426167
1_15. 1.22	Shoring	1.00	JOB	359,922	53,988	28,229	442,139	442139
1_15. 1.25	Gates for security at acc. ramp	1.00	JOB	14,660	1,466	1,100	17,226	17226
1_15. 1.26	Bollards at entrance of Acc Ramp	1.00	JOB	2,950	295	221	3,467	3466.76
1_15. 1.27	Care of Water	1.00	JOB	41,043	6,156	3,219	50,418	50418
1_15. 1.30	Remove Commercial Sites	1.00	JOB	539,695	53,969	40,488	634,152	634152
	TOTAL REACH 7: D/S SPTC TO D/S UPRR	1.00	JOB	18,313,503	3,223,795	1,468,844	23,006,142	23006142
1_15. 2	REACH 8: D/S UPRR TO D/S WILLOW							
1_15. 2.01	Bypass Channel Excavation	1.00	JOB	575,877	86,382	45,166	707,425	707425
1_15. 2.02	Struct. Exca. (Slo. Stab.)Gabion	1.00	JOB	101,648	15,247	7,972	124,868	124868
1_15. 2.03	Structure Excavation	1.00	JOB	5,367	805	421	6,593	6592.50
1_15. 2.04	Roadway Exca. (Maint/Acc. Ramp)	1.00	JOB	6,110	916	479	7,506	7505.69
1_15. 2.05	Disposal of Excavated Material	1.00	JOB	1,793,953	269,093	140,700	2,203,746	2203746
1_15. 2.06	Crushed Rock (Behind gabions)	1.00	JOB	50,345	7,552	3,949	61,845	61845
1_15. 2.08	Soil Nails w/ Gabions	1.00	JOB	4,349,139	869,828	355,934	5,574,900	5574900
1_15. 2.09	Aggregate Base 6" thick Ramp/Rd	1.00	JOB	45,037	6,756	3,532	55,325	55325
1_15. 2.11	Revegeted Areas - Planting	1.00	JOB	1,546	232	121	1,899	1899.41
1_15. 2.12	Bypass Chnnl Inlet Control Weir	1.00	JOB	650,073	70,496	49,143	769,712	769712
1_15. 2.14	Chain Link Fencing	736.67	LF	18,806	1,881	1,411	22,097	30.00
1_15. 2.15	Levees (Fill)	1.00	JOB	3,057	459	240	3,755	3755.40
1_15. 2.16	Mob & Demob	1.00	JOB	149,704	14,970	11,231	175,906	175906
1_15. 2.17	Clearing & Grubbing	1.00	JOB	64,293	6,429	4,823	75,545	75545
1_15. 2.18	Remove Residential Sites	1.00	JOB	615,276	61,528	46,158	722,961	722961
1_15. 2.19	(E) Railroad Demo/Disposal	1.00	JOB	229,133	34,370	17,971	281,474	281474
1_15. 2.21	Gates for security of Acc. Ramp	1.00	JOB	2,789	279	209	3,277	3277.02
1_15. 2.22	Bollards at entrance of Acc Ramp	1.00	JOB	738	74	55	867	866.69
1_15. 2.23	Care of Water	1.00	JOB	41,043	6,156	3,219	50,418	50418
	TOTAL REACH 8: D/S UPRR TO D/S WILLOW	1.00	JOB	8,703,933	1,453,452	692,734	10,850,119	10850119

1_15. 3 REACH 9: WLLW GLN TO CURTNR AVE

1_15. 3.01	Channel Widening Excavation	1.00	JOB	492,527	73,879	38,629	605,035	605035
1_15. 3.02	Struct. Exca. (Slo. Stab.)Gabion	1.00	JOB	58,745	8,812	4,607	72,164	72164
1_15. 3.03	Struct. Exca. (Slo. Stab.)Cribw.	1.00	JOB	91,087	13,663	7,144	111,894	111894
1_15. 3.04	Roadway Exca. (Maint/Acc. Ramp)	1.00	JOB	12,495	1,874	980	15,349	15349
1_15. 3.05	Disposal of Excavated Material	1.00	JOB	1,680,357	252,054	131,790	2,064,201	2064201
1_15. 3.07	Crushed Rock behind gabion/Cribw	1.00	JOB	377,586	56,638	29,614	463,838	463838
1_15. 3.08	Gabions (Sloped Facing Area)	1.00	JOB	331,319	66,264	27,115	424,698	424698
1_15. 3.09	Cribwalls-Fac'g Area-Gravity typ	1.00	JOB	162,828	32,566	13,326	208,719	208719

		QUANTY	UOM	CONTRACT	CONTINGN	ESCALATN	TOTAL COST	UNIT
1_15. 3.10	Cribwalls-Fac'g Area-Stab.w/Pile	1.00	JOB	1,232,373	246,475	100,857	1,579,704	1579704
1_15. 3.11	Soil Nails w/ Shotcrete Facing	1.00	JOB	596,767	119,353	48,839	764,960	764960
1_15. 3.12	Soil Nails w/ Welded Wire-gabion	1.00	JOB	990,285	198,057	81,045	1,269,386	1269386
1_15. 3.13	Agg Base 6'thk for Ramps & Roads	1.00	JOB	91,013	13,652	7,138	111,803	111803
1_15. 3.15	Concrete for Misc. Structures	1.00	JOB	52,796	7,919	4,141	64,856	64856
1_15. 3.16	Cast-in-Drilled-Hole Conc. Piles	1.00	JOB	497,649	99,530	40,728	637,906	637906
1_15. 3.17	Revegetated Areas - Planting	1.00	JOB	8,760	1,314	1,269	11,344	11344
1_15. 3.19	Chain Link Fencing	359.27	LF	9,171	917	688	10,777	30.00
1_15. 3.20	Mob & Demob	1.00	JOB	149,704	14,970	11,231	175,906	175906
1_15. 3.21	Clearing & Grubbing	1.00	JOB	34,271	3,427	2,571	40,269	40269
1_15. 3.22	Remove Residential Sites	1.00	JOB	156,364	15,636	11,730	183,731	183731
1_15. 3.24	Shoring for Cribwall	1.00	JOB	1,134,033	170,105	88,942	1,393,080	1393080
1_15. 3.26	Gates for security at Acc. Ramp	1.00	JOB	5,019	502	377	5,898	5897.68
1_15. 3.27	Bollards at entrance of Acc Ramp	1.00	JOB	1,475	148	111	1,733	1733.38
1_15. 3.28	Care of Water	1.00	JOB	27,751	4,163	2,177	34,091	34091
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	TOTAL REACH 9: WLLW GLN TO CURTNR AVE	1.00	JOB	8,194,375	1,401,917	655,049	10,251,342	10251342
1_15. 4	REACH 10A: CURTNR AVE-S. ALM EXP							
1_15. 4.01	Channel Widening Excavation	1.00	JOB	110,163	16,524	8,640	135,327	135327
1_15. 4.02	Struct. Exca. (Slo. Stab.)Cribw.	1.00	JOB	95,708	14,356	7,506	117,570	117570
1_15. 4.03	Roadway Excavation (Ramps)	1.00	JOB	2,952	443	232	3,626	3626.34
1_15. 4.04	Disposal of Excavated Material	1.00	JOB	521,432	78,215	40,896	640,542	640542
1_15. 4.05	Structural Backfill	1.00	JOB	148,004	22,201	11,608	181,812	181812
1_15. 4.06	Crushed Rock behind gabion/cribw	1.00	JOB	242,284	36,343	19,002	297,630	297630
1_15. 4.07	Cribwalls(Slp. Fac'g Area)Gravi.	1.00	JOB	533,855	106,771	43,691	684,317	684317
1_15. 4.08	Cribwalls Stab. w Pile&Soil-Nais	1.00	JOB	394,092	78,818	32,253	505,163	505163
1_15. 4.09	Agg Base 6" thick for ramps road	1.00	JOB	13,136	1,970	1,030	16,136	16136
1_15. 4.11	Conc. Barrier for Misc. Struct.	1.00	JOB	40,237	6,036	3,156	49,428	49428
1_15. 4.12	Cst-in-Drilled-Hole Conc. Piles	1.00	JOB	232,707	46,541	19,045	298,293	298293
1_15. 4.13	Revegetated Area - Planting	1.00	JOB	1,546	232	121	1,899	1899.41
1_15. 4.15	Mob & Demob	1.00	JOB	149,704	14,970	11,231	175,906	175906
1_15. 4.16	Clearing & Grubbing	1.00	JOB	101,834	10,183	7,640	119,657	119657
1_15. 4.19	Shoring for Curtner Ave Bridge	1.00	JOB	71,489	10,723	5,607	87,819	87819
1_15. 4.20	Care of Water	1.00	JOB	27,751	4,163	2,177	34,091	34091
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	TOTAL REACH 10A: CURTNR AVE-S. ALM EXP	1.00	JOB	2,686,894	448,490	213,833	3,349,217	3349217

1_15. 5 REACH 10B: S. ALM EXP-N. ALM EXP

1_15. 5.01	Channel Widening Excavation	1.00	JOB	2,331	350	183	2,864	2864.07
1_15. 5.02	Roadway Exca. (Maint/Acc. Roads)	1.00	JOB	3,570	535	280	4,385	4385.34
1_15. 5.03	Disposal of Excavated Material	1.00	JOB	14,180	2,127	1,112	17,419	17419
1_15. 5.04	Agg Base 6" thk for Ramps & Road	1.00	JOB	23,457	3,519	1,840	28,815	28815
1_15. 5.06	Revegetated Areas - Planting	1.00	JOB	26,281	3,942	2,061	32,284	32284
1_15. 5.07	Mob & Demob	1.00	JOB	58,106	5,811	4,359	68,275	68275
1_15. 5.08	Clearing & Grubbing	1.00	JOB	70,891	7,089	5,318	83,298	83298
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		QUANTY	UOM	CONTRACT	CONTINGN	ESCALATN	TOTAL COST	UNIT
	TOTAL REACH 10B: S. ALM EXP-N. ALM EXP	1.00	JOB	198,816	23,373	15,153	237,342	237342
1_15. 6	REACH 10C: STREAM GAGE STA							
1_15. 6.01	Channel Widening Excavation	1.00	JOB	220,326	33,049	17,280	270,654	270654
1_15. 6.02	Struc. Exca. (Slop. Sta.) Gabion	1.00	JOB	30,362	4,554	2,381	37,298	37298
1_15. 6.03	Roadway Exca. (Maint/Acc Ramps)	1.00	JOB	5,492	824	431	6,747	6746.68
1_15. 6.04	Disposal of Excavation Material	1.00	JOB	665,854	99,878	52,223	817,955	817955
1_15. 6.05	Crushed Rock Behind gabion/crib.	1.00	JOB	15,733	2,360	1,234	19,327	19327
1_15. 6.06	Gabions (Sloped Facing Area)	1.00	JOB	952,795	190,559	77,977	1,221,331	1221331
1_15. 6.07	Soil Nail w/ Welded Wire Facing	1.00	JOB	5,972,888	1,194,578	488,821	7,656,286	7656286
1_15. 6.08	Agg Base 6" thk Acc Ramps & Road	1.00	JOB	40,033	6,005	3,140	49,178	49178
1_15. 6.10	Revegetated Areas - Planting	1.00	JOB	14,429	2,164	1,132	17,725	17725
1_15. 6.12	Chain Link Fencing	1.00	JOB	11,004	1,100	826	12,930	12930
1_15. 6.13	Gates for security of Acc. Ramp			2,510	251	188	2,949	
1_15. 6.14	Bollards at entrance of Acc Ramp			738	74	55	867	
1_15. 6.15	Care of Water			27,751	4,163	2,177	34,091	
1_15. 6.16	Mob & Demob			149,704	14,970	11,231	175,906	
1_15. 6.17	Clearing & Grubbing			203,529	20,353	15,269	239,151	
	TOTAL REACH 10C: STREAM GAGE STA	1.00	JOB	8,313,148	1,574,882	674,364	10,562,394	10562394
1_15.21	REACH 11: CAP'TL EXP-BRANHAM LN							
1_15.21.01	Channel Widening Excavation	1500.00	CY	8,743	1,311	686	10,740	7.16
1_15.21.02	Struct.Exca. for Slope Stbl(Gbn)	10300	CY	67,985	10,198	5,332	83,515	8.11
1_15.21.03	Struct.Exca.for SlopeStbl(Crbwl)	1600.00	CY	10,561	1,584	828	12,973	8.11
1_15.21.04	Roadway Exca.(Maint/Access Ramp)	2100.00	CY	14,417	2,163	1,131	17,710	8.43
1_15.21.05	Disposal of Excavated Material	65500	CY	238,906	35,836	18,737	293,479	4.48
1_15.21.06	Gabions (Sloped Facing Area)	55600	CY	1,608,770	321,754	131,662	2,062,186	37.09
1_15.21.07	Cribwalls (Sloped Facing Area)	6300.00	SF	238,767	47,753	19,541	306,061	48.58
1_15.21.08	Soil Nails w/ Wld Wire fac'g GBN	55600	SF	1,868,010	373,602	152,878	2,394,490	43.07
1_15.21.09	Agg Base 6"thk for Acc Ramp/Road	2200.00	TN	68,807	10,321	5,397	84,524	38.42
1_15.21.10	Remove Residential Sites	1.00	JOB	33,354	3,335	2,502	39,192	39192
1_15.21.11	Conc. for Misc. Struct.(Barrier)	65.00	CY	16,371	1,637	1,228	19,236	295.94
1_15.21.12	(CIDH) Conc. Pile 30" Dia. Crbwl	3250.00	LF	142,697	28,539	11,678	182,915	56.28
1_15.21.13	Chain Link Fencing	2200.00	TN	41,228	4,123	3,093	48,443	[illegible]
1_15.21.15	Mob & Demob							

1_15.21.16	Clearing & Grubbing		166,971	16,697	12,526	1[illegible]94	
1_15.21.17	Shoring for Retaining Wall		20,216	3,032	1,586	24[illegible]4	
1_15.21.18	Gates for security at ramp enter		3,764	376	282	4,423	
1_15.21.19	Bollards at entrance of Ass.Ramp		468	47	35	550	
1_15.21.22	Care of Water		27,751	4,163	2,177	34,091	
	TOTAL REACH 11: CAP'TL EXP-BRANHAM LN	1.00 JOB	4,660,438	874,738	377,499	5,912,675	5912675

1_15.22 ROSS CRK: AM EXP- JARVIS AVE

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                                                    QUANTY UOM     CONTRACT  CONTINGN  ESCALATN  TOTAL COST      UNIT
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 1_15.22.01  Channel Widening Excavation             46800 CY         8,743     1,311       686      10,740      0.23
 1_15.22.02  Struct. Exca. (for Fld Wall etc)        16400 CY        67,702    10,155     5,310      83,167      5.07
 1_15.22.03  Roadway Exca. (Maint/Acc Ramp)        1000.00 CY         6,865     1,030       538       8,433      8.43
 1_15.22.04  Disposol of Excavated Material          64200 CY       291,311    43,697    22,848     357,855      5.57
 1_15.22.05  Agg Base 6"thk for Acc Ramp/Road      1100.00 TN        56,559     8,484     4,436      69,478     63.16
 1_15.22.07  Filter Fabric                           28550 SY         6,690     1,004       525       8,218      0.29
 1_15.22.08  Concrete for Misc. Structures         1400.00 CY       351,016    52,652    27,530     431,198    308.00
 1_15.22.09  Reinf. Masonry Block Wall(Flood)        15700 SF       152,132    22,820    11,932     186,884     11.90
 1_15.22.10  Redwood Fencing                       9400.00 LF       150,527    15,053    11,293     176,873     18.82
 1_15.22.11  Articulated Precast Conc.Mat 6"        253800 SF     3,713,649   557,047   291,261   4,561,958     17.97
 1_15.22.12  Clearing and Grubbing                  253800 SF        16,304     1,630     1,223      19,157      0.08
 1_15.22.13  Mob & Demob                                            149,704    14,970    11,231     175,906
 1_15.22.14  Shoring for Culvert Construction                       145,380    21,807    11,402     178,589
 1_15.22.15  Traffic Control                                        233,229    23,323    17,497     274,049
 1_15.22.17  Remove Fencing                                          23,945     2,394     1,796      28,135
 1_15.22.18  Care of Water                                           13,375     2,006     1,049      16,430
                                                                ----------- --------- --------- -----------
     TOTAL ROSS CRK: AM EXP- JARVIS AVE               1.00 JOB    5,387,130   779,384   420,556   6,587,071   6587071

 1_15.23  CANOAS CRK: U/S ALM-115' NIGHT'

 1_15.23.01  Conc. 4 Misc.Struct. Floodwl ftg       760.00 CY       171,801    25,770    13,474     211,046    277.69
 1_15.23.02  Reinf. Masonry Block Wall(Flood)        15260 SF       120,585    18,088     9,457     148,130      9.71
 1_15.23.03  Redwood Fencing                       2550.00 LF        40,835     4,083     3,063      47,981     18.82
 1_15.23.04  Mob & Demob                                             82,651     8,265     6,200      97,117
 1_15.23.05  Shoring for Culvert construction                       168,347    25,252    13,203     206,802
 1_15.23.06  Traffic control                                         16,712     1,671     1,254      19,637
 1_15.23.07  Clearing and Grubbing                                   19,338     1,934     1,451      22,723
                                                                ----------- --------- --------- -----------
     TOTAL CANOAS CRK: U/S ALM-115' NIGHT'            1.00 JOB      620,268    85,063    48,104     753,436    753436

 1_15.99  ASSOCIATED GENERAL ITEMS

 1_15.99.01  Construction Overhead
                                                                  5,683,868   568,387   426,404   6,678,659
                                                                ----------- --------- --------- -----------
     TOTAL ASSOCIATED GENERAL ITEMS                   1.00 JOB    5,683,868   568,387   426,404   6,678,659   6678659
 1_30  PLANNING, ENGINEERING and DESIGN
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1_30.23 Constructn Contracts(s) Documnts

1_30.23.01	Plans and Specifications (P&S)	1.00	EA	3,027,000	0	0	3,027,000	302700
1_30.23.02	Plan Formulation/Economics	1.00	EA	25,000	0	0	25,000	2500
1_30.23.03	PPMD	1.00	EA	2,025,000	0	0	2,025,000	202500
1_30.23.04	Environmental Studies Documents	1.00	EA	2,720,000	0	0	2,720,000	272000
1_30.23.07	Cost Estimates	1.00	EA	450,000	0	0	450,000	45000
1_30.23.08	Other Studies/Investigations	1.00	EA	35,000	0	0	35,000	3500
1_30.23.09	Contract Award Documents	1.00	EA	240,000	0	0	240,000	24000
1_30.23.99	Associated Constr Docs	1.00	EA	3,049,388	0	0	3,049,388	304938

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                                                          QUANTY UOM    CONTRACT   CONTINGN  ESCALATN  TOTAL COST    UNIT
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             TOTAL Constructn Contracts(s) Documnts        1.00 EA   11,571,388          0         0  11,571,38811571388
1_31         CONSTRUCTION MANAGEMENT

1_31.23      Construction Contracts

1_31.23.11   Supervision and Administration
                                                                      8,641,908          0         0   8,641,908
             TOTAL Construction Contracts                           -----------  ---------  ---------  -----------
                                                                      8,641,908          0         0   8,641,908
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T5: ECONOMIC APPENDIX

I. PURPOSE AND RATIONALE FOR REEVALUATION

The purposes of this report are to document the current economic reanalysis that has been completed for the Upper Guadalupe River Flood Damage Reduction Study and to compare the results of this reanalysis to the results reported in the 1998 Feasibility Report. In the 1998 report, three project alternatives designed to reduce flooding in the study area were presented: (1) the Willow Glen Plan (2) the Valley View Plan and (3) the Bypass Channel Plan. From an economic perspective, the Valley View Plan was determined to be the National Economic Development (NED) Plan because it maximized net benefits; the Bypass Channel Plan was determined to be the Locally Preferred Plan (LPP) and it was the plan that was ultimately authorized.

Since the time of the release of the 1998 Feasibility Report, significant institutional changes in the environmental realm have occurred, including the designation of the Upper Guadalupe River as critical habitat under the Endangered Species Act. These environmental changes prompted a re-investigation of the design and mitigation plans associated with both the Bypass Channel and Valley View alternatives. It was found that the design of the Valley View Plan and the mitigation measures associated with this plan were unsatisfactory.

As a result of this finding, the design and mitigation plans for the Valley View Plan were revised to meet the new environmental requirements. The costs associated with these design changes have caused total project costs of the Valley View Plan to increase significantly. (As it turns out, costs for the Bypass Channel Plan have also increased significantly.)

II. SCOPE

An economic analysis associated with the Valley View and Bypass Channel plans was performed to develop a reasonable estimate of current project benefits. The scope of the economic analysis follows guidance provided in EC 11-2-183 and ER 1105-2-100. For all benefit categories, previous assumptions used in the 1998 Feasibility Report, which is the latest approved document, were reviewed and, if warranted, also updated. A detailed analysis of the inundation reduction benefits was performed using current available data and techniques (risk analysis using the HEC-FDA model), as this benefit category comprised a major portion (approximately 95%) of total NED benefits in the 1998 report; the benefits associated with the savings in current maintenance costs, which make up less than one percent of total NED benefits, were updated using the GDP Implicit Price Deflator index. The benefits for all other categories (savings in flood insurance, savings in traffic-related costs, advanced bridge replacement benefits, and recreation benefits) were calculated using the most current data.

III. METHODOLOGY

The analysis was conducted in accordance with ER 1100-2-100 (Planning Guidance Notebook), ER 1105-2-101 (Risk Analysis), and EM 1110-2-1619 (Risk Analysis for Flood Damage Reduction Studies). Inundation reduction damages and benefits were computed within a risk analysis format using the Hydrologic Engineering Center's Flood Damage Analysis (HEC-FDA) program. A federal discount rate of 5.625% and a 50-year period of analysis were assumed. All monetary values are expressed in October 2003 prices.

IV. SUMMARY OF NED ANALYSIS FROM 1998 FEASIBILITY STUDY

The NED analysis documented in the1998 Feasibility Report is summarized below. It is presented here to provide background information and to easily perform a comparative analysis between it and the current analysis. In the 1998 report, average annual values were computed using the prevailing discount rate of 7.25%. A 50-year period of analysis was assumed and all monetary values were reported in October 1997 prices.

Eight economic benefit categories were evaluated for the 1998 Feasibility Study: (1) inundation reduction benefits (2) savings in emergency costs (3) saving in flood insurance costs (4) saving in traffic-related costs (5) savings in current maintenance (6) advanced bridge replacement benefits (7) benefits accrued during project construction and (8) recreation benefits (for the Bypass Channel Plan.)

Table 1 is a summary of the average annual NED benefits as presented in the 1998 Feasibility Report. A fourth plan labeled "Bypass Channel Plan with Recreation" is included so that the reader can easily compare the NED benefits of the Bypass Channel Plan with and without recreation benefits included. (Note: This labeling and table format will be used throughout the report.)

Table 1
Summary of Average Annual NED Benefits: 1998 Feasibility Report
7.125% Discount Rate, 50-Year Period of Analysis
October 1997 Price Level
(1,000's)

NED Benefit Category	Willow Glen Plan	Valley View Plan	Bypass Channel Plan	Bypass Channel Plan with Recreation
Inundation Reduction	14,460	17,343	20,411	20,411
Savings in Emergency Costs	282	293	328	328
Savings in Flood Ins. Costs	36	65	208	208
Savings in Traffic Costs	74	136	179	179
Savings in Current Maint. Costs	126	126	210	210
Advanced Bridge Repl. Benefits	156	350	570	570
Benefits During Construction	0	1,671	1,671	1,671
Recreation Benefits	0	0	0	3,018
Total NED Benefits	**15,134**	**19,984**	**23,577**	**26,595**

V. CURRENT NED BENEFITS

Table 2 displays the current average annual NED benefits associated with the Valley View and Bypass Channel plans for the same benefit categories used in the 1998 Feasibility Report. The sections that follow describe how the benefits associated with the seven benefit categories listed in Table 2 were derived.

Table 2
Summary of Current Average Annual NED Benefits

5.625% Discount Rate, 50-Year Period of Analysis
October 2003 Price Level
(1,000's)

NED Benefit Category	**Valley View Plan**	**Bypass Channel Plan**	**Bypass Channel Plan with Recreation**
Inundation Reduction Benefits	16,775	18,777	18,777
Savings in Emergency Costs	476	526	526
Savings in Flood Insurance Costs	86	276	276
Savings in Traffic Disruption Costs	233	279	279
Savings in Current Maintenance Costs	88	220	220
Advanced Bridge Replacement Benefits	69	102	102
Benefits Accrued During Construction	1,236	1,236	1,236
Recreation Benefits	0	0	2,300
Total NED Benefits	**18,963**	**21,416**	**23,716**

A. Inundation Reduction Benefits (Structures, Contents, Automobiles)

Property Identification

A sample of structures was used in the 1998 economic analysis to represent the approximately 8,700 structures in the .002 probability event flood plain. A general review of the land uses of the sample was verified through several site visits to the area and through a commercial database (First American Real Estate Solutions Win2Data Software/Internet Database), which provided key data on each sample unit such as land value, improvement value, square footage of livable space, the recording date of the last sale, the year built, the address of the parcel, and the land use. It was determined that the land uses/number of structures have not changed significantly since the 1998 report was published, which made it reasonable to carry forward that same sample to this reanalysis. Effort was made to identify any new structures built post-1998 and include these in the analysis; it was estimated that approximately 550 new (post-1998) residential structures exist in the area just north of Foxworthy Avenue, in the southern portion of the flood plain.

Table 3 shows the estimates of the number of structures within the .5-, .02-, .01-, and .002-probability event flood plains. These numbers were taken from the 1998 study. The estimate for the .002 probability event flood plain was adjusted to account for the new residential structures built since 1998, and assumes that any structure built since 1998 is out of the .01 probability event flood plain.

Table 3
Estimate of the Number of Structures,
.05-, .02-, .01-, .002-Probability Event Flood Plains

Number of Structures	**.05-Probability Event**	**.02-Probability Event**	**.01-Probability Event**	**.002-Probability Event**
All Land Uses	2,939	4,873	7,502	8,721

Value of Damageable Property (Structures and Contents)

For informational purposes, a current estimate of the total value of damageable property for structures and contents in the .002 probability event flood plain was calculated, and is based on estimates contained in the 1998 Feasibility Report. The 1998 estimates were updated using the GDP Implicit Price Deflator. Content values were based on a percentage of structure value (content-to-value structure value ratio), which in turn were based on the land use type (e.g., commercial/industrial, residential, public, warehouse, mobile homes). Table 4 displays the total value of damageable property for structures and contents. There is approximately $3.8 billion worth of damageable property in the .002 probability event flood plain.

Table 4
Total Value of Damageable Property .002 Probability Event Flood Plain
October 2003 Prices
($1,000's)

Land Use Category	**Structure**	**Content**	**Structure + Content**
Residential (includes SFR, MFR, Mobile Homes)	1,625,000	813,000	2,438,000
Commercial/Industrial/ Public	661,000	732,000	1,393,000
Total	2,286,000	1,545,000	3,831,000

Depreciated Replacement Values of Structures

Depreciated replacement values of the sample structures were based on the most current improvement values obtained from the First American database. Under California's Proposition 13, assessed improvement values of structures are allowed to increase at a maximum rate of 2% per year from the date a property is sold. Consequently, assessed improvement values for structures obtained from the commercial database do not reflect depreciated replacement values, which is the cost that would be incurred to replace the structure using the exact same materials in the exact same condition. Adjustment factors used to convert assessed improvement values to depreciated replacement values were derived by comparing factors published by the Marshall and Swift Valuation Service, a recognized commercial and residential appraisal guide, to factors derived by compounding annually the 2% maximum increases from the date a property was sold. The adjusted values of each sample unit were used as input into the HEC-FDA program.

Automobiles

During field visits conducted for the 1998 report, an estimate of the number of automobiles per structure sample unit was determined. On average, there were about 2 cars per unit; the numbers estimated in 1998 were brought forward to this analysis. The number of automobiles per unit was then multiplied by the average automobile value and by 2/3 (to account for the fact that not all of the automobiles will be impacted by flooding because, if given enough warning time, they can be driven out of harm's way). The product is an estimated value of damageable automobile property per unit.

The average automobile value was calculated using information provided in the paper, "California Vehicle License Fees: Incidence and Equity" (Dill, Jennifer, Todd Goldman, and Martin Wachs, University of California, Berkeley). According to this paper, the state of California assessed a vehicle license fee (VLF) on all privately owned, registered vehicles through the year 1997. This fee was computed as 2% of a vehicle's value, which was based on the most recent purchase price and a fixed depreciation factor. With the additional information from the 1997 California Legislative Analyst's report that estimated an average 1997 VLF of $171, an average value of an automobile (less depreciation) in California could be computed by dividing the average VLF ($171) by the 2% uniform tax rate. This value was computed to be $8,550. This value was then updated to reflect October 2003 price levels, deriving an average automobile value of $9,400.

Computing Expected Average Annual Damages and Benefits Using HEC-FDA

The lack of complete knowledge of the hydrology and hydraulics of a study area introduces significant uncertainty when designing any type of flood damage reduction project and in determining its reliability. Risk analysis is used in Corps flood damage reduction studies as a method to explicitly quantify the uncertainties associated with the hydrology, hydraulics, and economics of a study area. Economic risk analysis was performed using the Corps' Hydrologic Engineering Center's Flood Damage Analysis (HEC-FDA) program.

During each simulation, the HEC-FDA program runs thousands of iterations representing hypothetical flood events. The program randomly selects from the distributions of each of three functions – probability-discharge, stage-discharge, and stage-damage -- all of which contribute to computing expected damages. The program transforms these functions into a probability-damage curve, which is then integrated to derive expected damages.

Unlike in the 1998 analysis, stage-damage curves were computed with uncertainty in HEC-FDA. (The 1998 analysis used an excel add-on software program called @Risk to compute stage-damage curves; these curves were then entered into a program referred to in the 1998 report as the HEC-Risk Damage Model.) The basic economic data (ground elevation, foundation height, structure value, content value, and depth-percent damage curves) used to compute stage-damage curves and the uncertainty parameters associated with these variables were defined and entered into the program, allowing the program to compute a distribution of stage-damage curves. The standard deviations used for structure value, first-floor elevation, and content-to-structure value ratio (when appropriate) were +/-15%, 0.6 feet, and +/-15%, respectively. For residential structures/contents, the uncertainty in percent damages at various depths of flooding were obtained from the generic depth-percent damage curves published in EGM 01-03, and were characterized by standard deviations of percent damages ranging from 0% for zero or negative depths of flooding to approximately 5% for high depths of flooding.

Adjustments to NED Benefits

Both the Valley View and Bypass Channel Plans require the removal of structures that are currently in the flood plain. Removing these structures from the with-project flood plain eliminates any benefit (reduction in damages) these structures would have realized had a flood occurred with a project in place. These benefits must be deducted from total NED benefits. The Valley View Plan requires the removal of 32 residential structures while the Bypass Channel Plan requires the removal of 34 residential structures. Additionally, both plans require 9 commercial/industrial structures to be removed. The amount of benefits deducted from total NED benefits for the Valley View and Bypass Channel Plans were $294,200 and $327,000, respectively. These adjustments are reflected in the analysis.

B. Savings in Emergency Costs

Emergency costs include flood-fighting efforts (e.g., sandbagging) taken to reduce flood damages, evacuation costs for flood plain residents, administrative costs for public agencies involved with delivering emergency services, evacuation costs incurred by public safety agencies (e.g., police and fire departments) to effect a safe and orderly evacuation, costs associated with monitoring and forecasting the flood problem, and costs related to the provision of basic necessities (food, clothing, and shelter) offered to flood victims. Some of these costs could be saved if flood protection is provided; the benefits (emergency costs saved) have been developed using costs incurred by FEMA during recent flooding in California.

The 1995 winter storms in California resulted in a total of approximately $81 million in direct payments to approximately 29,200 families living within the 42 counties that were declared flood disaster areas were made by the Federal Emergency Management Agency (FEMA). These payments covered costs related to temporary housing, repairs, counseling, and other emergency-type services. Additional administrative costs associated with operating the Disaster Assistance Program represent approximately 25% of the direct payments, or $20 million. The sum of direct payments and administrative costs were used to estimate the average emergency cost per household, calculated to be approximately $3,500.

To annualize damages attributable to emergency costs, a depth-percent damage relationship was developed to relate depth of flooding at a structure to the percent of damages incurred; this curve was entered into the HEC-FDA model. Expected annual damages were computed assuming 100% damages at a water elevation at or above the first floor elevation of a structure. Benefits were derived by subtracting the residual damages of a project from the damages incurred without a project.

C. Savings in National Flood Insurance Operating Costs

The National Flood Insurance Program (NFIP), administered by FEMA, requires property owners in participating communities whose structures lie within the .01 probability event flood plain to purchase flood insurance. A reduction in the number of required policies resulting from a project that removes structures from the .01 probability event flood plain would represent a savings to the nation, as operating costs (administrative and overhead) associated with the program would be reduced.

Benefits were derived by calculating the product of the number of structures removed from the .01 probability event flood plain, the flood insurance participation rate in the community, and the average operating cost per policy. It was estimated in the 1998 Feasibility Report that the Valley View Plan would remove approximately 2,060 structures (out of approximately 7,500) from the .01 probability event flood plain while the Bypass Channel Plan would remove approximately 6,620 structures from the .01 probability event flood plain. Currently, FEMA services approximately 8,195 flood insurance policies in Santa Clara County, a county where there are approximately 29,000 structures in flood prone areas; this translates into a participation rate of 28% for the county. For the purposes of this analysis, the 28% county rate was applied to the Upper Guadalupe study area. Operating costs (administrative and overhead) associated with this program currently average about $149 per policy (Economic Guidance Memorandum 02-05).

D. Savings in Traffic Disruption Costs

Flooding at the cross section of Interstate 280 and State Highway 87 has forced the closure of Highway 87 in the past (I-280 is routed over Highway 87 and so is not affected by flooding), necessitating detours and inducing costly delays for motorists. Furthermore, flooding in the same area has caused the light rail system to suspend service in the past, precipitating public transit users to resort to driving their own vehicles and thereby compounding the traffic problem.

Traffic disruption costs, which in this analysis include costs associated with travel time delays and mileage detours, were calculated using the methodology published in the Institute for Water Resources (IWR) Report 91-R-12, "Value of Time Saved for Use in Corps Planning Studies."

Previous data and assumptions used in the 1998 report regarding the length of road closure as a function of flood event (2.5 days, 3.5 days, and 5.5 days for the 20-, 50-, and 100-year flood events, respectively), trip purpose percentages (90% work, 5% personal business, 5% social/recreation for peak hours; 10% work, 25% personal business, 50% social/recreation, 15% vacation for non-peak hours), the number of peak traffic hours (5.5) and non-peak traffic hours (18.5) in a day, the number of light rail riders in a day (approximately 25,400 passengers per day), and the percentage (65%) of these passengers that would be affected by the flooding were reviewed and judged to be reasonable for calculating traffic disruption costs for this analysis, especially given the fact that the savings in traffic losses do not comprise a major portion (less than 1%) of total NED benefits; current data for other variables pertinent to calculating traffic losses, such as median family income value for the study area ($74,800 now vs. $70,020 in 1998), traffic counts, and operating costs per mile per vehicle ($.40/mile/vehicle now vs. $.33/mile/vehicle in 1998) were used in the calculations.

The frequency calculation method, although a simplistic technique given that there are only several data points, was used to provide a reasonable estimate of average annual without-project traffic losses and with-project benefits.

E. Savings in Current Maintenance Costs

The 1998 report indicates that maintenance work along the Upper Guadalupe River from the Canoas Creek confluence downstream to Interstate 280 consists mostly of removing channel blockages (e.g., trees), cleaning debris from the bridge pier noses, and repairing failed/failing banks due to erosion. In 1998, annual costs for this maintenance work was estimated to be approximately $200,000, and was based on records provided by the Santa Clara Valley Water District. It was also estimated that implementation of the Valley View Plan would reduce these costs by about 40% (to $120,000 per year in 1998 dollars) while the implementation of the Bypass Channel Plan would effectively eliminate all of these maintenance costs. (Current maintenance costs incurred by problems arising in the channel without a project in place are differentiated from the Operation and Maintenance costs that would be incurred once a project is implemented; project O&M costs are included in the NED costs.) The reductions ($88,000 for the Valley View Plan and $220,000 for the Bypass Channel Plan – in October 2003 prices) in current maintenance costs are a benefit attributable to the project, as these costs are saved once a project is implemented. For this analysis, all previous assumptions and costs used in 1998 provided the basis for deriving current costs, which were obtained by applying a GDP Implicit Price Deflator factor.

F. Advanced Bridge Replacement Benefits

An advanced bridge replacement translates into a greater expected life for the new bridge as compared to the existing bridge. Benefits associated with the replacement are realized because the life of the service being provided by the bridge is extended, thereby deferring the replacement cost for the existing bridge. The Valley View Plan includes 3 bridge replacements (Willow Street, Alma Avenue, and Willow Glen Way) while the Bypass Channel Plan includes 4 bridge replacements (Willow Street, Alma Ave, Curtner Avenue, and Willow Glen Way.) Benefits for the Valley View and Bypass Channel Plans are approximately $69,000 and $102,000, respectively.

G. Benefits Accrued During Construction

Once work along hydraulic reaches 7 and 8 (from Willow Glen Way north to Highway 280) is completed, flood protection benefits would be realized in the areas downstream of the project site along both banks of the Guadalupe River. It has been estimated by the Water Resources Section that protection would increase such that the zero-damage point would be increased to a 10-year (.1 probability) event from a 6.5-year event (.15 probability) event. Average annual benefits computed by the HEC-FDA program for these downstream areas total approximately $3.6 million.

The construction schedules for the Valley View and Bypass Channel plans provided by the District's Project Management and Cost Estimating Sections were used to calculate the total benefits that would accrue during construction. The construction schedules indicate that the entire project for the Valley View Plan would be completed in about 8 years; the Bypass Channel Plan would be completed in about 9 years. However, work along hydraulic reaches 7 and 8 is to be completed in 3 years for the Valley View Plan and 4 years for the Bypass Channel Plan. This suggests that average annual benefits of approximately $3.6 million will accrue for about 5 years leading up to the base year for both plans, or when the entire project is completed and fully operational. This translates into approximately $21 million (including compound interest) in total benefits over the 5-year period preceding the base year or approximately $1.2 million in benefits amortized over a 50-year period of analysis and based on the current 5.625% discount rate. Annual benefits of $1.2 million were claimed for both the Valley View and Bypass Channel plans.

H. Recreation Benefits

In the 1998 Feasibility Report recreation benefits were claimed for the Bypass Channel Plan because this plan would provide for a continuous recreation trail/path connecting the area north of the project area to the area south of the project area in downtown San Jose.

In 1998 Recreation benefits were estimated to be approximately $3 million. This value was derived using (1) the Unit Day Value methodology to determine a unit day value per recreation user and (2) the Design Capacity Methodology to estimate the total number of projected annual recreation users once the project is built. The same methodologies were used for this report to estimate recreation benefits.

In the Unit Day Value method points are assigned to various recreation criteria, summed, and then converted to a unit day dollar value using a point-to-dollar conversion table published each fiscal year in a Corps of Engineers Economic Guidance Memorandum (EGM). Table 5 is a summary of the points assigned for each criteria in the 1998 report along side the points assigned for this reevaluation. Given that the recreation characteristics of the study area have not changed in the last five years, points assigned for each category for this report were assumed the same as in the 1998 report.

Table 5
General Recreation Activity Points for Various Recreation Criteria
Years 1998 and 2003

Criteria	Maximum Allowable Points	Points (1998)	Points (2003)
Recreation Experience	30	10	10
Availability of Opportunity	18	5	5
Carrying Capacity	14	11	11
Accessibility	18	18	18
Environmental Quality	20	10	10
Total Points	100	**54**	**54**

Table 6 shows the 1998 and 2003 unit day values once the points have been converted to dollars. The difference in values between now ($6.47) and in 1998 ($5.40) is due to price level increases.

Table 6
Unit Day Values (UDV) 1998 and 2003

1998 Points	1998 UDV	2003 Points	2003 UDV
54	**$5.40**	54	**$6.47**

In the Design Capacity method, the annual use rate of the area is determined based on the total daily design load of the project for various recreational activities. In 1998, the design load was determined to be 724 recreation users (walkers, runners, bicyclists, picnickers, etc.); a total daily design load of 2,172 users was then derived by assuming a turnover rate of three (724 x 3). For the purposes of this analysis, a turnover rate of between 1 and 3 was assumed to produce a total design load of between 724 and 2,172 users; the average of these two figures (1,448 daily users) was used to calculate recreation benefits.

Next, the total design load is then converted to an annual user rate by considering seasonal fluctuations in recreation use. In 1998 it was assumed that 35% of the total annual park visitation would occur for 91 days during the months of June, July, and August, which resulted in approximately 197,700 users for that time period, or approximately 564,700 annual users (91 days x 2,172 users = 197,652 summer users;

197,652/.35 = 564,720 annual users). For this analysis, the original assumption that 35% of the total annual park visitation would occur between June and August was carried forward; this resulted in an annual use rate of 376,480 (91 days x 1,448 users = 131,768 summer users; 131,768/.35 = 376,480 annual users).

The total estimated increase in annual use is found by subtracting the existing number of users (assumed 20,000 in 1998; the same assumption was used for this report) from the number of annual users (564,720 in 1998; 376,480 currently). In 1998, the total estimated increase in annual use was 544,720; for this analysis it is 356,480.

Finally, benefits are calculated by multiplying the total estimated increase in annual use by the unit day value ($5.40, based on 1995 values; $6.47 currently). Recreation benefits in the 1998 report were calculated to be approximately $3M (544,720 annual users x $5.40 = $2.9M, which was then updated to 1997 price levels); recreation benefits derived for this analysis are approximately $2.3M (356,480 annual users x $6.47).

VI. CURRENT NED COSTS

Table 7 shows total NED costs, which were based on implementation costs developed by the District's Cost Estimating Section, average annual costs, which were calculated based on a 50-year period of analysis and a current discount rate of 5.625%, and total average annual costs. Total NED costs also includes traffic costs related to the project and interest during construction (IDC). Total average annual costs include average annual O&M costs.

Table 7
NED Costs
5.625% Discount Rate, 50-Year Period of Analysis
October 2003 Price Level
($1,000's)

NED Cost Category	Valley View Plan	Bypass Channel Plan	Bypass Channel w/Rec
Lands & Damages	36,834	64,377	64,377
Utility Relocations	23,015	24,414	24,414
Recreation Facilities	0	0	2,296
Fish & Wildlife Facilities	7,300	7,890	7,890
Floodway Contr. & Div. Struc.	78,188	94,597	94,597
E & D	11,571	9,869	9,869
S & A	8,642	8,642	8,642
Traffic Delay/Detour Costs	1,620	1,726	1,726
Interest During Construction	44,805	65,596	66,328
Total NED Costs	211,976	277,111	280,139
Annual Costs	12,750	16,668	16,850
O&M Costs	**589**	**577**	**577**
Total Average Annual Costs	**13,339**	**17,245**	**17,427**

Traffic Delay Costs

Bridge replacements associated with either project will cause traffic delays and mileage detours for motorists. The imputed costs associated with these disruptions have been estimated and included as part of NED costs. The detour routes and traffic counts used in the 1998 report, along with a current mileage rate ($.40/mile) and average value of time ($.38), were used as a basis to calculate current traffic losses. (According to the Traffic Studies Section of the City of San Jose's Department of Transportation, current bridge traffic counts are not available.)

O&M Costs

Annual O&M cost estimates, which include inspections and routine maintenance of bridges, roads, floodwalls and other project features as well as vegetation, sediment, trash, and debris removal were taken from the 1998 report and updated to reflect current prices. Due to the design changes associated with the Valley View Plan, the O&M costs for this plan were assumed to be approximately $529,000, or equal to the O&M costs of the Bypass Channel Plan. This value was updated from the previous value of $482,000 used in the 1998 study.

Also, additional O&M costs associated with the Mitigation and Monitoring Plan (see main document for more details) were included because a portion of these costs is incurred after the base year. After discounting and annualizing, additional O&M costs for the Valley View Plan are approximately $60,000; additional O&M costs for the Bypass Channel Plan are approximately $48,000.

IDC

Interest during construction (IDC) is not a financial cost borne by any agency, but rather an economic cost. It is included in the analysis as a value adjustment of pre-base year costs. The resources used to build a project, such as construction materials, labor, and equipment have an opportunity cost -- the price of those resources. Typically these costs are incurred before the base year (the year the project is fully operational) and so are not equivalent in time value to future benefits and costs. Costs were made equivalent by compounding them up to the base year.

Based on project-specific construction schedules provided by the Project Management and Cost Estimating Sections of the District, an 8-year construction period was used to calculate IDC for the Valley View Plan; a 9-year construction period was used for the Bypass Channel Plan. Interest was compounded up to the base year (2012) on a quarterly basis using the federal discount rate of 5.625%.

VII. CURRENT NED ANALYSIS

Table 8 compares NED benefits to NED costs within each plan, resulting in the net benefits and benefit-to-cost ratios (BCRs) for each plan.

Table 8
Current NED Analysis
October 2003 Price Level
(Monetary Values in $1,000's)

NED Account	**Project Alternative**		
	Valley View	**Bypass Channel**	**Bypass Channel with Recreation**
Average Annual Benefits	18,963	21,416	23,716
Average Annual Costs	13,339	17,245	17,427
Net Benefits	5,624	4,171	6,289
Benefit-to-Cost Ratio	1.42	1.24	1.36

VIII. COMPARISON: PAST & PRESENT NED ANALYSES

Table 9 shows the NED benefits and costs for each plan and for each analysis (1998 Feasibility Report and current LRR), allowing for an easy comparison between the two plans and between the two analyses.

Table 9
NED Analysis: Past (1998) and Present (2003)
October 1997 Price Level (1998 Analysis) and October 2003 Price Level (2003 Analysis)
7.125% Discount Rate (1998) & 5.625% Discount Rate (2003)
(Monetary Values in $1,000's)

NED Account	**Project Alternative**					
	1998 Valley View	**2003 Valley View**	**1998 Bypass Channel**	**2003 Bypass Channel**	**1998 Bypass with Rec.**	**2003 Bypass with Rec.**
NED Benefits						
Inundation Reduction Benefits	17,343	16,775	20,411	18,777	20,411	18,777
Savings in Emergency Costs	293	476	328	526	328	526
Savings in Traffic-Related Costs	136	233	179	279	179	279
Benefits Accrued During Constr.	1,671	1,236	1,671	1,236	1,671	1,236
Savings in Flood Insurance Costs	65	86	208	276	208	276
Savings in Current Maintenance	126	88	210	219	210	219
Adv. Bridge Replacement Ben.	350	69	570	102	570	102
Recreation Benefits	0	0	0	0	3,018	2,306

Total Average Annual Benefits	19,984	18,963	23,577	21,416	26,595	23,716
NED Costs						
Lands & Damages	30,666	36,834	50,033	64,377	50,033	64,377
Utility Relocations	8,491	23,015	14,685	24,414	14,685	24,414
Fish & Wildlife Facilities	1,719	7,300	3,076	7,890	3,076	7,890
Recreation Facilities	0	0	0	0	2,000	2,296
Floodway Contr. & Div. Str.	38,648	78,188	58,008	94,597	58,008	94,597
Engineering & Design	2,800	11,571	3,500	9,869	3,500	9,868
Supervision & Administration	1,196	8,642	1,533	8,642	1,533	8,642
Traffic Delay/Detour Costs	2,613	1,620	2,699	1,726	2,699	1,726
Interest During Construction	11,533	44,805	18,359	65,596	18,359	66,328
Total NED Costs	97,666	211,976	151,893	277,111	153,893	280,139
Average Annual Costs	7,123	12,750	10,973	16,668	11,120	16,850
O&M Costs	221	589	482	577	482	577
Total Average Annual Costs	7,344	13,339	11,455	17,245	11,602	17,427
NED Analysis						
Net Benefits	12,640	5,624	12,122	4,171	14,993	6,289
Benefit-to-Cost Ratio (BCR)	2.7	1.42	2.1	1.24	2.3	1.36

UPPER GUADALUPE RIVER FLOOD CONTROL PROJECT
LIMITED REEVALUATION REPORT

ADDITIONAL APPENDIX

A1: QUALITY CONTROL AND QUALITY CONTROL PLAN

Quality Control Certification, Independent Technical Review, and Quality Control Plan follow.

QUALITY CONTROL CERTIFICATION

UPPER GUADALUPE RIVER PROJECT, CALIFORNIA
ITR OF LIMITED REEVALUATION REPORT (LRR)

COMPLETION OF QUALITY CONTROL ACTIVITIES

Members of the Corps' Sacramento District, have completed the Independent Technical Review (ITR) of the Draft LRR for proposed refinements to the Upper Guadalupe River Project, which was authorized in the WRDA 1999. Certification is hereby given that the ITR process has been conducted in fulfillment of established procedures and requirements, appropriate to the level of risk and complexity inherent in the product at this post-authorization stage of project implementation. Documentation of the quality control process is enclosed.

GENERAL FINDINGS

Compliance with clearly established policy, principles and procedures, utilizing clearly justified and valid assumptions, has been verified. This includes assumptions; methods, procedures and materials used in analyses; alternatives evaluated; the appropriateness of data used and level of data obtained; and the reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing Corps policy. The undersigned recommends certification of the quality control process for this stage of the study.

Ron Ganzfried, MLA (CESPK-PD-WC)
ITRT Chair, Water Resources Planning Specialist

21 April 2004
Date

QUALITY CONTROL CERTIFICATION

As noted above, all issues and concerns resulting from independent technical review of the product have been resolved. The study may proceed to the next stage of report processing, through the South Pacific Division, to Corps Headquarters (HQUSACE) and the Assistant Secretary of the Army for Civil Works (ASA-CW).

Thomas Kendall
Chief, Planning Division
San Francisco District

21 April 2004
Date

UPPER GUADALUPE RIVER PROJECT LIMITED REEVALUATION STUDY
STATUS OF ITR FOR LIMITED REEVALUATION REPORT (LRR), 21 APRIL 2004

PDT Members	ITR Members	ITR Memo	PDT Action	Back Check	Status, Remarks, and Unresolved Issues
Joel Pliskin Planning Compliance	Ron Ganzfried	Yes	Done	Done	Done; ITR Certification done and provided
Marc Goodhue Geotechnical Concerns	David Serafini	Yes	Done	N/A	Done
Bill DeJager Environmental Concerns	Matt Davis	Yes	Done	Done	Done
Timi Shimabukuro Economics Concerns	Gary Bedker	Yes	Done	N/A	Done
Glenn Gannon Civil Design	Charlie Mifkovic	Yes	N/A	N/A	SPN to provide QC documentation from Moffat + Nichol and QA from Glenn Gannon with LRR package
Bill Firth Hydrology + Hydraulics	Charlie Mifkovic	Yes	Done	Done	Done
Susan Miller Real Estate	Bob Vincent	Yes	Done	Done	Done
George Liu MCACEs	Sherman Fong	Yes	Done	Done	Done; SPN's certification to be included in final LRR package
Kathy Ungvarsky Cultural Resources	Richard Perry	E-mail	N/A	Done	Done

Upper Guadalupe LRR Review
Review by Charles Mifkovic, Hydraulic Design
13 August 2003
Backcheck by Charles Mifkovic, 3 Sep 2003
2nd Backcheck by Charles Mifkovic, 17 Sep 2003

NOTE: All plates referenced in this Appendix can be found in the *Technical Appendices, Upper Guadalupe River Feasibility Study, January 1998.*

Backcheck responses 10 SEP 2003.

1. Pg 9, Par 4.5: It is noted that Pg B12, Par 7.7 indicates the 50 year flood is 11,200 cfs rather than 12,000 cfs. The 50 year flood appears rounded up while the value for the 100 year flood is correctly stated.

Response: Could not find error.

Backcheck: Page 9 refers to the main body of the LRR. There is not necessarily an error but it is curious why the 50 year flood appears rounded but not the 100 year.

2nd Backcheck: Accepted. SPN corrected the LRR to show 11,200 cfs for the 50 year flood.

2. Pg 15: "can be" is repeated in last sentence.

Response: Corrected.

Backcheck: Accepted.

3. Pg A5: The thermal modeling by Jones and Stokes should be reviewed by ERDC or a similar qualified entity.

Response: Notify SPN environmental Section

Backcheck: Accepted.

4. Pg B2, Par 2.1: It should be made clearer that Table 1 includes the Coyote Creek basin.

Response: Corrected.

Backcheck: Accepted.

5. Pg B4, Par 3.0: Although the river downstream of Hwy 101 was improved by SCVWD to provide 100 year protection it no longer does due to maintenance issues. The Lower Guadalupe River Project by SCVWD has the purpose of raising levees to restore the 100 year level of protection. The original SCVWD project set the water surface elevation at I-880 which became the basis for the starting condition of the Sacramento District project through the downstream reach. Improvements between Hwy 101 and I-880 are needed to maintain the original project water surface elevation at I-880 so as not to impact the SPK project upstream of I-880

Response: This Paragraph has been inserted into the Appendix re-write.

Backcheck: Accepted.

6. Pg B5, Par 3.0: Construction of the downtown project is still on-going. It was not completed in 1998.

Response: Corrected

Backcheck: Accepted.

7. Pg B5, Par 3.0: The I-280 to Willow Street bypass has not been constructed. The paragraph needs to be updated with current scheduling.

Response: Corrected

Backcheck: Accepted.

8. Pg B6, Par 4.2: Is there a particular reason for using the period 1931 to 1960? It would seem appropriate to update the table for years after 1960. Table 6 should indicate the location, i.e. the gage at San Jose.

Response: The study was limited to 1931 to 1960. Location corrected.

Backcheck: Accepted.

9. Pg B7, Par 6.0: There are no plates provided showing the floodplains. In fact, all referenced plates in the Hydraulics Appendix are missing.

Response: All plates referenced in this Appendix can be found in the *Technical Appendices, Upper Guadalupe River Feasibility Study, January 1998.*

Backcheck: Accepted; however see Comment 28 Backcheck.

10. Pg B10, Par 7.4: In developing the floodplains was consideration given to the potential for overbank flows to return to the river, i.e. the normal depth elevation exceeding the river elevation along particular reaches?

Response: See additions to paragraph 7.4.

Backcheck: As long as the overbank elevations were checked against the corresponding river elevations at each section of the floodplain then the response is accepted. It is noted that in Par 7.4, Item 7, the last sentence does not make sense.

11. Pg B12, Par 7.8: It is noted that the n-value for riprap is normally 0.030 to 0.035 and the n-value for the channel bottom appears high. Since cribwalls and gabions are proposed at some locations, n-values for these structures should be provided for computing composite n's. If vegetative plantings are incorporated in the bank protection, the n-value should reflect the effect of the plantings.

Response: Corrected

Backcheck: Unaccepted until the following question is addressed. Do the corrections to the n-values, i.e. riprap, effect any of the hydraulics in the Technical Appendices?

2nd Response: Riprap n values used in the design HEC-RAS model are .035 for riprap. Gabions and floodwalls are used in cross-sections that have composite n values of .05 - .06. No changes are necessary to design water surface elevations. N values are shown in Table 10 of section 7.8.

2nd Backcheck: Accepted.

12. Pg B15, Par 8.2: How is it proposed to keep the 1 on 1 side slopes stable?

Response: Correction made in Section 8.0.

Backcheck: Unaccepted. The reviewer could not find in Par 8.0 any discussion of the side slope stability.

2nd Response: Section 7.10 was added to discuss side slope stability.

2nd Backcheck: Accepted.

13. Pg B16, Par 8.3: There are no criteria presented in the text to establish when banks should be protected.

Response: Table 12 added in section 7.9.

Backcheck: Accepted.

14. Pg B16, Par 8.3: Should not the ERDC physical model study of the bypass be discussed?

Response: Section 7.11 added.

Backcheck: Accepted.

15. Pg B16, Par 8.3: The flow split between the bypass and the natural channel is not provided. At what flow does water begin entering the bypass channel?

Response: See section 7.11.

Backcheck: Accepted.

16. Pg B16, Par 8.3: There is no discussion of the downstream hydraulics regarding a starting water surface elevation for the hydraulic runs above I-280.

Response: See new Table 13 in Section 7.12.

Backcheck: Accepted. It is noted that the location is upstream of I-280. The final design should verify that the intervening reach used the correct starting water surface elevations at I-280 from the downtown project as these have increased from the GDM for that project.

17. Pg B16, Par 8.3 to 8.3.2: For the recommended plan it would be very helpful to have a tabulated detailed description of the improvements for each reach from station to station as the improvements change. The description should include bottom width, side slopes, channel slope, type of channel protection if needed, bridge and culvert information.

Response: Tables added at the end of Section 8.

Backcheck: Accepted.

18. Pg B16, Par 8.3 to 8.3.2: For the recommended plan, the water surface and channel profiles should be provided, as well as a velocity profile for evaluating bank protection needs.

Response: See Plates C1 – C16 for water surface elevations and channel profiles in the January 1998 report. Velocity profiles will be plotted in the final report.

Backcheck: Accepted; however see Comment 28 Backcheck.

19. Pg B17, Par 8.3: The Willow Glen Way to Blossom Hill Road include improvements of up to 200 ft channel width. In the hydraulic analysis was consideration given to effective flow width and possible loss of velocity head at the channel extremities when setting top of bank by either risk analysis or freeboard?

Response: No consideration of velocity head loss at the channel extremities has been give at this time. However most channel cross-section have side slopes of 1V:2H or steeper and depths over the channel benches are a minimum of 5 feet and in most places 10 feet or greater.

Backcheck: Accepted. However, if channel velocities are high and there are low bank elevations, the final design should consider the approximations of HECRAS as a one-dimensional model.

20. Pg B17, Par 8.3.1: Interior drainage is not discussed for Canoas Creek.

Response: Statement added to 8.3.1.

Backcheck: Accepted. However, the project costs should reflect the potential for additional facilities for interior drainage.

21. Pg B17, Par 8.3.1: The culvert sizes are not discussed.

Response: Culvert sizes added

Backcheck: Accepted.

22. Pg B17, Par 8.3.1 and 8.3.2: The criteria for sizing the culverts is not discussed, i.e. freeboard, sediment considerations.

Response: See new Section 7.14.

Backcheck: Accepted. It is noted pressure flow conduits could induce flooding at flood events greater than the design flow and there could be a project cost associated with this.

23. Pg B17, Par 9.0: There should also be a discussion of any induced flooding impacts that the project may cause for floods exceeding the design flood.

Response: A detailed study of induced flooding impacts has not yet been completed. A detailed study will follow final plan selection.

Backcheck: Accepted. However, the project costs should reflect the potential for additional facilities related to induced flooding.

24. Pg B17, Par 10.0: It is noted that SPK recently contracted with ERDC to perform a detailed sediment study downstream of I-280 and is presently evaluating the need for grade control on the unimproved reaches. SPN may want to consider updating the 1996 HEC-6 study to also evaluate the need for grade control on the unimproved reaches

Response: This comment will be addressed in final design.

Backcheck: Accepted. As noted in previous comments this could have an effect on project costs.

25. Pg B20, Par 11.2: There should be a discussion of the assumptions regarding the bridges and culverts in the uncertainty analysis. The current hydraulic design uses freeboard to contain flood flows.

Response: The current hydraulic design uses freeboard to contain flood flows.

Backcheck: Unaccepted. If bridges and culverts have an effect on the index points used in the economic analysis then there should be a discussion of debris and sediment considerations at the bridges and culverts for setting the upper and lower limits of stage uncertainty. In addition the SCVWD has expressed concern that the Upper Guadalupe Project not convey more water than can be carried in the Downtown Project. This can be evaluated by applying R&U to the Downtown and Upper Guadalupe Projects. It may very well be necessary to adjust the freeboard in the Upper Guadalupe Project based on the R&U analysis so that the Upper Guadalupe Project has the same level of reliability for conveyance as the Downtown Project.

2nd Response: Risk analysis was completed at suspected project weak points (low capacity points). Bridges and culverts were not considered the points of this project. However during final design of the selected plan bridges and culverts will be reviewed and R&U analysis will be coplted if needed.

2nd Backcheck: Accepted.

26. Pg B21 Par 11.2: It would seem that bridge and channel improvements under project conditions should result in less variability in parameters with resulting less uncertainty in stage than without project conditions. Is there a reason for less uncertainty for without project conditions?

Response: The current hydraulic design uses freeboard to contain flood flows.

Backcheck: Unaccepted. The response does not address the question. Also refer to Comment 25 Backcheck.

2nd Response: This project requires an increase in the existing riparian habitat. An assumption was made that riparian variability would result in an increase in the uncertainty of the design n values.

2nd Backcheck: Accepted.

27. Pg B24, Table 8: The table indicates the bypass plan has a greater chance of passing the 100 year flood than the 50 year flood. Are the numbers switched?

Response: The risk analysis section (11.0) has been re-written. The current hydraulic design uses freeboard to contain flood flows.

Backcheck: Unaccepted. The response does not address the question and the rewrite indicates the material was moved to the economics appendix. The reviewer does not have the updated economics appendix to backcheck. Also refer to Comment 25 Backcheck.

2nd Response: Table 8 on page B24 was incorrect. Section 11.0 has been re-written and a project performance table has been added. A complete R&U analysis will be rerun for the Upper Guadalupe and Downtown projects. The Upper Guadalupe River Project will be designed to match the performance of the Downtown Project.

2nd Backcheck: Accepted.

28. Hydrology and Hydraulics Appendix B: There is not enough information in the Appendix for a reviewer to effectively evaluate if hydraulic features of the project are fully incorporated in the cost estimate. In particular, features such as bridge and culvert improvements, and bank and invert protection are not discussed in enough detail to evaluate if these improvements are sufficiently adequate.

Response: Refer to plates included in the *Technical Appendices, Upper Guadalupe River Feasibility Study, January 1998* for better detail to check cost estimating.

Backcheck: Accepted; however, it is unclear to this reviewer why, in the electronic age, these plates could not be added to the LRR Hydraulics Appendix so that the reader does not have to refer to plates in another document that may or may not be readily available. It would almost be preferable not to even refer to the Plates if they cannot be presented in the LRR.

CESPK-RE-C **(Initial) 5 Sep 2003**
(Interim) 30 Sep 2003

Upper Guadalupe River Draft LRR
Independent Technical Review, Real Estate

1. Independent Technical Review by Robert Vincent, CESPK-RE-C Real Estate. Initial ITR comments August 2003; PDT responses 5 Sep; ITR back-check comments 30 Sep 2003.

2. Responses/actions and coordination by Susan Miller, CESPN-PPMD-B Real Estate, for the Project Development Team.

3. Following are the comments and responses to the Technical Review of the Real Estate Plan for the Upper Guadalupe River Project, which is an appendix to the Limited Re-Evaluation Report (LRR). Seamless review and coordination were conducted to address and resolve ITR comments.

Specific Comments, Responses, and Conclusions:

1. Reference the real estate plan prepared in support of the authorized feasibility study.

Response/Action: Concur. A sentence was added mentioning that the information and conclusions contained in the Real Estate Plan that was included in the Feasibility Study in 1998 are incorporated into this Real Estate Plan for the LRR.

Back check: Accepted

2. Incorporate that plan by reference.

Response/Action: Concur. The statement added, per the previous comment, also includes wording that states that the information and conclusions contained in that Real Estate Plan are incorporated into the Real Estate Plan for the LRR by reference.

Back check: Accepted

3. Address only the changes to the project that are being addressed by the LRR and do not revisit those issues already adequately addressed in the Real Estate Plan in support of the feasibility study.

Response/Action: Concur. Those issues that were adequately addressed in the Feasibility Study and that do not pertain to the changes addressed in the LRR were deleted.

Back check: Accepted

4. Attach a tract register and map of the NED and LPP to the Plan.

Response/Action: Concur. A tract register and map will be attached to the Real Estate Plan for the NED. There will not be such attached for the LPP. This is because the LRR and Real Estate Plan are mostly addressing the changes in the NED.

Back check: Accepted

5. Show land value estimates as real estate acquisition cost estimates.

Response/Action: Concur. The word value in the total real estate costs was replaced with the words "cost estimates".

Back check: Accepted

6. Update real estate MCACE's to account for real estate acquisition cost increases.

Response/Action: Concur. The updated real estate MCACES will be included in the Real Estate Plan for a total updated Real Estate cost. This real estate MCACES will further be included in the updated MCACES for the total project cost.

Back check: Accepted

7. Address the issue of the preparation of a real estate acquisition schedule.

Response/Action: Concur. Language is now included in the Real Estate Plan stating that the Acquisition Schedule will be developed later during the final design phase when construction sequencing is more developed.

Back check: Accepted

Additional Comments:

1. Ensure that the revised Draft LRR and related Real Estate Plan, incorporate a new "Uncertainties" header and paragraph(s) to address remaining uncertainties regarding the extent of real estate property acquisition and costs in recognition that there are still pending technical studies and resultant design changes that may effect the estates necessary to support the Authorized Project and NED Plan (e.g., new/modified structures, features, related hydraulic and environmental mitigation for induced flooding, interior drainage, etc.).

Response/Action: Concur. This comment, as pertains to the Real Estate Plan (REP), applies to the concern about there being two different levels of design for the two plans that were appraised. The Valley View Plan (NED) had a higher degree of quality mapping than the By Pass Plan (LPP). This difference in mapping quality created a concern about the degree of accuracy, or uncertainty, of the By Pass gross appraisal, i.e., is it comparable to that of the NED gross appraisal. The sponsor, including their Real Estate Department, has thoroughly reviewed the maps used for the LPP and has conferred with the Corps project team as to the accuracy of the LPP design used for the LPP gross appraisal. Since the sponsor is thoroughly familiar with the design of the two plans and the lands involved, they provided the Real Estate Program Manager with information regarding various reaches in the LPP. The Corps project engineers/designers also confirmed the accuracy of this additional information. This new information prompted a request for an amendment to the gross appraisal for the LPP to reflect such design changes. The gross appraisal has been amended, and the uncertainties of technical design information affecting the accuracy of the gross appraisal for the LPP has been eliminated.

Back Check: Accepted

CESPK-PD-R 21 APRIL 2004

INDEPENDENT TECHNICAL REVIEW

UPPER GUADALUPE RIVER FLOOD DAMAGE REDUCTION PROJECT SAN JOSE, CALIFORNIA

Limited Reevaluation Report

Reviewer:
Matt Davis
NEPA Compliance Specialist
Environmental Resources Branch, Planning Division
Sacramento District

Material Reviewed: Limited Reevaluation Report

General Comments

1. In reviewing the report, there were number of inconsistencies between various sections of the report. This is probably a result of different PDT members preparing different sections of the report. The PDT should review the report in its entirety to correct these inconsistencies.

Response/Action: The PDT is aware of inconsistencies in the last version of the LRR and has worked to correct these with the current version. Inconsistencies that were corrected included inconsistencies with mitigation numbers, those between the econ appendix and the main report specifically with regard to the number of years attributed to the construction schedule, and between accounts of project history and information on the 1998 and 2000 EIS/EIR—these inconsistencies have all been fixed. Any other consistencies are unknown; please advise if ITR team is aware of any additional ones.

Backcheck: Resolved.

2. The major change to the Valley View Plan appears to be the replacement of widening with a bypass in Reach 7. To support this change, the report should describe what other alternatives were look at in-lieu of a bypass to reduce SRA cover impacts in this reach and still lessen real estate requirements and utility relocations. For example, the report should address whether raising the bench elevation in Reach 7 would address riparian establishment concerns, reduce SRA cover loss, and reduce project costs.

Response/Action: Concur. See response to detailed comment 18.

Backcheck: Resolved.

3. Additional detail should be provided regarding the mitigation and monitoring plan, the undercut bank mitigation requirement, and compensation requirements for SRA cover. Information should be added to the report on what cultural resources activities have been conducted during PED and what remains to allow the project to proceed to construction. Given the extensive mitigation and monitoring requirements, the PDT should make sure that the costs for mitigation and monitoring are accurately accounted for in the project cost estimates. The Downtown project may provide some useful information on mitigation and monitoring costs.

Response/Action: Concur. Additional information has been provided regarding the MMP. Undercut bank mitigation requirements are addressed in the response to comment 10. SRA cover mitigation is addressed in the response to comment 9.

The following text is added to the end of section 3.4.3:

Terrestrial and aquatic resources that will be significantly affected by the authorized project include riparian and urban forest, SRA cover, undercut banks, wetlands, water temperatures, and habitat for anadromous fish (primarily steelhead trout). There will also be significant effect on visual resources. The MMP addresses compensatory mitigation and monitoring for the above resources. It includes mitigation goals, descriptions of mitigation actions and methods, success criteria, and monitoring and adaptive management procedures. Monitoring by the Corps will extend for three years after construction of a given reach, after which all additional monitoring will be the responsibility of the SCVWD.

The following information on cultural resources and what needs to be done before construction has been added to the LRR since the last iteration (section 5.3, and 5.3-1).

National Historic Preservation Act	Feasibility-level cultural resources coordination completed. Revised Valley View Plan footprint is entirely within footprint of feasibility study alternatives. Treatment plan and MOA will be prepared prior to construction.

No cultural resource studies have been conducted to this date during PED.

Regarding the MMP, lessons learned from the downtown Guadalupe Project were incorporated to develop the new plan and costs for the new plan. Actual vs. estimated costs were considered. Savings from lessons learned can also be realized and on the Upper Guadalupe project we are expecting SCVWD to take a bigger role, now that they are familiar with the procedures to implement the plan.

Backcheck: Resolved.

4. It is understood that SPD has provided SPN guidance to prepare an additional ROD. It is this reviewer's opinion that an EA would be the appropriate means to address

changes to the project and new information resulting from the regulatory EIS and Section 7 consultation.

Response/Action: Not concur. This issue has been discussed with our Office of Council and with Robin Mooney and Todd Snow in SPD, who have concurred that a ROD is the appropriate vehicle at this time for NEPA compliance for the LRR and for construction of the project. An EA may be prepared later to cover any additional small project changes should they arise.

Backcheck: Resolved.

Detailed Comments

1. Page 1-1. Section 1.1. Project Background. Unable to locate Figure 2-1.1 Project Authorization.

Response/Action: Concur. Text on Page 1-1 changed to (*2.1 Original Project Authorization*) The authorization is no longer a figure, but is imbedded in text.

Backcheck: Resolved.

2. Page 1-1. Section 1.1. Project Background. Second paragraph, last sentence. Indicate whether the increased costs are for the NED plan (Valley View Plan) or LPP plan (Bypass Plan).

Response/Action: Change made; increased costs are for the authorized project.

Backcheck: Resolved.

3. Page 1-2. Section 1.4. Post-Authorization Environmental Policy Changes. I suggest significant changes to this paragraph to better describe and focus on what occurred to cause changes to the NED and LPP plans and to accurately present NMFS' position. Indicate that changes to the LPP and NED plans resulted from Section 7 consultation with NMFS, which was not completed until after the ROD was issued and the project was authorized. Then state what changes to these plans were required as a result of Section 7 consultation. Note that although Section 7 consultation did not occur specifically on the NED plan, the NMFS April 2000 letter did provide evidence that the NED plan would likely not be acceptable if implemented. Address the results of consultation with NMFS on the acceptability of an accelerated construction period for the LPP of 6 years based on current temperature modeling per the NMFS January 2004 letter.

The paragraph as currently written misstates NMFS' position as stated in the April 2000 letter. The April 2000 letter does not mention an accelerated 3-year construction period for either plan. The April 200 letter only refers to a 6-year construction period for the Valley View Plan and indicates that for the LPP it might consider shortening the 25-year construction period to 20 years if it would not appreciably worsen project impacts based on verification through temperature modeling.

Response/Action: Concur. Text has been added and modified to address these comments.

This new paragraph goes at the beginning of this section and summarizes the situation:

The primary reason for modification of the Valley View Plan is delayed input from the National Marine Fisheries Service regarding acceptable project impacts on the steelhead trout *Oncorhynchus mykiss*, despite repeated efforts to obtain timely input from this agency. Formal Section 7 consultation on the LPP was completed after project authorization and established a 25-year construction schedule as a requirement for the project based on information then available. Informal consultation on the Valley View Plan at that time, informed by new thermal modeling information, resulted in a determination by NMFS that this plan would need to be substantially modified to be acceptable. Following is a chronology of consultation efforts with NMFS and changes in applicable environmental regulations.

A paragraph lower down has been revised:

On April 5, 2000, the Corps received a letter (Enclosure E4, *April 2000 NMFS Letter*) from NMFS regarding potential temperature impacts resulting from the Upper Guadalupe River Project. The letter stated that the neither the authorized project~~,~~ nor the Valley View Plan as it then existed would~~not~~ be acceptable to NMFS~~,~~ due to an accelerated construction schedule of ~~three~~six years. The letter stated the authorized project was otherwise acceptable. The letter further noted that the the Valley View Plan ~~however, was additionally~~was inherently unacceptable due to the nature of the design which ~~had~~would cause large impacts ~~and~~on low-bank riparian ~~habitat.~~habitat and shaded riverine aquatic (SRA) cover. The letter also emphasized the extreme sensitivity of ~~listed~~the river's anadromous salmonid species to water temperature increases and habitat ~~changes.~~degradation. NMFS recommended the Corps modify the Valley View Plan to parallel the design of the authorized project, which had acceptable design parameters. The letter also stated ~~parameters, and that the Corps use a much longer construction schedule for both plans.~~that while NMFS could not endorse a construction period of less than 25 years without documentation that "trust resources would be adequately protected", a construction period of 20 years would most likely would not appreciably worsen project impacts, though this would need to be verified through termperature modeling. Revision of design parameters for the Valley View Plan and a ~~increase inshaded riverine aquatic (SRA) cover ample time to recover. SRA~~

lengthening of the construction schedule for both plans would reduce temperature impacts from construction and allow SRA cover ample time to recover. SRA cover is critical because it provides shade to the river and thereby controls water temperatures, in addition to providing important habitat features.

New paragraph for end of section:

As a result of this coordination, the Valley View Plan was revised according to NMFS criteria. The LPP did not require revision due to NMFS input, but the issue of the construction period needed resolution. New thermal modeling using updated tree growth rates and revised vegetation mapping determined that the LPP could be constructed in nine years with acceptable thermal impacts. NMFS has agreed in writing with this determination, though reopening of formal Section 7 consultation will be required prior to construction. Additional details are provided later in this report.

Backcheck: Resolved.

4. Page 1-4. Section 1.7. Mention the ROD (if possible, refer to it and include it with the document in the environmental appendix) and when it was issued for the Feasibility EIS.

Response/Action: Concur. "The Record of Decision (ROD) for the 1998 EIR/EIS is dated June, 1999 and is available as Enclosure E5 to the LRR." was added to this paragraph.

Backcheck: Resolved.

5. Page 2-1. Section 2.2. Bottom of page. Figure numbering appears incorrectly identified in text. The map showing the project reaches does not match the text and table 2.2.1-1. The text indicates the project ends at Blossom Hill but the map figure shows a reach 13 extending above Blossom Hill. And table does not show a reach 13. Correct these inconsistencies. The figure shows fish barriers removed by District – is this part of the authorized project? If not, why include this information?

Response/Action: Concur. These items have been corrected. The fish barrier removal by the SCVWD is not part of the Federal project.

Backcheck: Resolved.

6. Page 3-1. Section 3.1. Second paragraph. Make sure text is consistent with section 1.3 Scope, page 1-2, where changes to the authorized project are briefly identified. Text mentions changes required for environmental compliance while Section 1.3 mentions changes dealing with bridge removal/replacement and design changes in addition to construction period related environmental compliance. It appears that all the structural modifications to the project were not the result of environmental compliance.

Response/Action: Concur. Sentence modified to cover structural modifications:

While there are some changes to the authorized project required for environmental compliance and PED level design updates....

Backcheck: Resolved.

7. Page 3-1. Section 3.4. The text incorrectly indicates that NMFS in its biological opinion directed the Corps and SCVWD to construct the project over a 25-year time period. A reading of the biological opinion indicates that the 25-year construction period was proposed by the action agencies not NMFS. See page 5-1 of the LRR where this is addressed.

Response/Action: Not concur. The Corps Regulatory Branch and the SCVWD did propose a 25-year construction schedule in the Biological Assessment. However, the LRR text is correct as it stands in that NMFS itself required a 25-year construction schedule. Sentence one in section IX of the BO (page 21) states that reinitiation of formal consultation is required if: "(1) the amount or extent of taking specified in any incidental take statement is exceeded." Under *Amount or extent of take anticipated*, page 16, the BO states: "NMFS also assumes that the proposed mitigation will be fully implemented and remain successful over the life of the project and that the proposed 25-year construction schedule is followed. *Take will be exceeded if either of these assumptions prove incorrect* " (emphasis added). Therefore, the Corps and the SCVWD are bound to a 25-year construction schedule by the BO unless NMFS agrees otherwise. No action is needed, but text will be clarified to indicated the dual origin of the 25-year schedule.

Text is added to this section to indicate that the 25-year schedule was included in the project description provided to NMFS through the Section 7 consultation for the SCVWD's Section 404 permit application, but that the 25-year schedule was also mandated by NMFS through the BO.

Backcheck: Resolved. 25-year construction period is not a term and condition for incidental take. Modifying the construction period as part of the proposed action will however require reinitiation of consultation as indicated by the NMFS.

8. Page 3-5. Section 4.4.3. Update of the Mitigation Plan. Third paragraph. The acreages shown for the authorized mitigation plan don't match those on page 2-5. Explain discrepancy.

Response/Action: Concur. The correct numbers are 20.92 acres of riparian forest, 0.52 acres of wetland, and 13,210 linear feet of SRA cover mitigation (8,462 net gain in SRA cover) within the Corps project boundaries [The Regulatory EIS says 13,348 feet, but that includes non-Federal mitigation plus a math error] Text is corrected accordingly.

Backcheck: Resolved.

9. Page 3-5. Section 4.4.3. Update of the Mitigation Plan. Why is there not a more specific compensation ratio than "1:1 or better replacement" for linear feet of SRA cover? What is the performance standard for SRA cover – is it no net loss of SRA cover

in terms of linear feet (i.e., not less than 1:1 compensation)? Explain. Assuming a loss of 4,748 linear feet as stated for the authorized and modified plan, this translates to a ratio of 2.13:1 (10,111 linear feet) for the authorized plan and 2.78:1 (13,193 linear feet) for the modified plan; significantly greater than 1:1. The feasibility EIS on page 4.4-53 states to establish at least 4,958 linear feet of new vegetative cover along unshaded banks as sufficient to provide the replacement ratio needed to meet the SRA cover requirements. The NMFS biological opinion indicates that 13,348 linear feet of SRA cover are to be provided. Explain these inconsistencies.

Response/Action: Not concur. The BO is a somewhat unclear on this issue. Page 4, in describing the project, states that the project will mitigate loss of SRA cover on a 1:1 basis. On page 13, the BO repeats this 1:1 mitigation for SRA cover losses (and adds a discussion of undercut banks that is addressed in the response to comment 10). Term and condition 2.A of the BO, on page 18, specifies a compensation ratio of 1:1 for riparian forest (far below the planned ratio and the recommendations of the FWS) and specifies that SRA cover losses shall be "mitigated fully" without specifying what that means. Based on these text excerpts, it appears that 1:1 mitigation is satisfactory for SRA cover. However, the text then goes on to mention (based on a letter from the SCVWD) that the SCVWD will plant an additional 8,462 linear feet of SRA cover *as a contingency* (emphasis added) in case other mitigation fails. It's not clear in this context whether the use of the word *will* by NMFS refers to the intentions of the SCVWD to create this contingency, to direction from NMFS to do so, or both.

Given the imperative of reducing thermal impacts to the maximum extent practicable, all mitigation designs for study alternatives have preferentially located riparian forest plantings next to the river wherever allowed by design constraints. This results in effective compensation ratios for SRA cover far above the 1:1 ratio specified above. Thus, SRA cover mitigation does not extend to a required ratio and then stop, but goes far above a 1:1 ratio as an incidental effect of reducing thermal impacts. LRR text has been clarified to reflect this.

New text is added to Section 4.4.3 of the LRR:

Given the imperative of reducing thermal impacts to the maximum extent practicable, all mitigation designs for study alternatives have preferentially located riparian forest plantings next to the river wherever allowed by design constraints. This results in effective compensation ratios for SRA cover far above a 1:1 ratio. Thus, SRA cover mitigation does not extend to a fixed ratio and then stop, but rather varies by alternative as an incidental effect of minimizing thermal impacts.

Backcheck: Resolved.

10. Page 3-5. Section 4.4.3. Update of the Mitigation Plan. The feasibility EIS and NMFS biological opinion refer to the mitigation requirement of compensating for the loss of undercut banks. The NMFS biological opinion specifies the replacement and reestablishment of undercut banks. Why isn't this requirement addressed here?

Response/Action: Concur. Mitigation of undercut banks is to be accomplished through SRA cover mitigation and by emplacement of revetment materials. Text will be added.

Text below is added and correct mitigation numbers are placed in existing text as per response to comment 8 above.

SRA cover mitigation includes 1:1 mitigation for loss of 1,720 feet of undercut banks, to be accomplished through SRA cover mitigation plantings and placement of revetments.

Backcheck: Resolved.

11. Page 3-5. Section 4.4.3. Update of the Mitigation Plan. If the original HEP was based on a 3-year construction period and the period has been changed to 9 years explain how this affects the HEP and the updated mitigation plan. Theoretically mitigation requirements should be lessened by a lengthened construction period.

Response/Action: Not concur. The HEP did not use annual thresholds for impact avoidance as a basis for determining compensation ratios, so these ratios were not increased to compensate for a short construction period in an effort to provide minimum habitat units at all times. It's not clear that compensation ratios would be lower with a longer construction period when using standard HSI-type models. Mitigation for thermal impacts would be greater for a very short construction period due to the need to avoid certain thresholds, but the HEP did not evaluate thermal impacts.

Backcheck: Resolved.

12. Page 3-6. Table appears to be missing the bottom which has the total acres. Check to confirm that table is consistent with text.

Response/Action: Concur. LRR is corrected; bottom of table was inadvertently cut off.

Backcheck: Resolved.

13. Page 3-7. Top of page. The text mentions that SPN proposes to adopt a mitigation and monitoring plan from the regulatory EIS as the basis for construction of the Federal project. Since this appears to be a change to the project, provide a description of the plan and its cost that is proposed for adoption. Indicate what Federal commitments are being made in regards to the period of monitoring, and when the project would be transferred to the local sponsor for O&M. Indicate whether this proposed M&M plan has been approved by NMFS in accordance with the biological opinion. Address Section 401 requirements in regards to mitigation commitments.

Response/Action: Partially concur. See response to comment 3 (now further amended to include a three-year limit) for more information on the plan. Costs are included in the project's cost estimates and are based on experience with the Downtown Guadalupe project. The mitigation and monitoring plan in general and through numerous specific provisions addresses Section 401 requirements and specifies commitments to achieve various numerical mitigation standards and goals. Additional description is provided below and will be added to the LRR:

The plan specifies various numerical standards for defining mitigation success and possible remedial actions if these standards are not met. However, adaptive management is part of the plan, thus allowing flexibility in determining these remedial actions. NMFS approval of the plan will be obtained as part of reopened formal Section 7 consultation prior to construction.

Backcheck: Resolved.

14. Page 3-7. Third paragraph. Indicate whether formal consultation with NMFS will be required to change the construction period from 25 years to 9 years for the modified LPP plan.

Response/Action: Concur. The answer is yes and text will be added in the requested location.

Backcheck: Resolved.

15. Page 3-8. Table. Third row in table. State what the small increase in riparian loss is.

Response/Action: Concur. The increase is 1.46 acres. Text is corrected.

Backcheck: Resolved.

16. Page 4-1. Section 4.2. Check to see whether the 4,775 linear feet loss is consistent with prior loss estimates in the document.

Response/Action: Concur. The correct number is 4,748. Text is corrected.

Backcheck: Resolved.

17. Page 4-4 Section 4.3. The text indicates that NMFS was concerned about the short construction period for the Valley View Plan. Knowing this, explain why the Corps approached NMFS with a proposed construction period of 6 years for the Valley View Plan while at the same time proposing a 25-year construction period for the LPP as part of the proposed action submitted for formal consultation. Why didn't the Corps propose a similar construction period for the Valley View plan if a 25 year-construction period was acceptable and would significantly reduce adverse effects?

Response/Action: Not concur. It should be obvious from the text that consultation occurred after completion of the final planning EIS, so the proposals were not made at the same time. However, text will be clarified.

The 25-year construction period was initially proposed by the SCVWD due to uncertainties about local and Federal funding. This construction period was retained in the Regulatory Branch's Biological Assessment in 1999 due to thermal modeling information available by that time which indicated that this construction period would result in acceptable thermal impacts, as opposed to a six-year construction period. The intention of the SCVWD was that if more construction funding became available, they would do more thermal modeling to see how far they could reduce the construction period for the LPP.

Text is added to this section:

NMFS did not indicate their concern about a short construction period to Corps planning staff until after completion of the final EIS and Record of Decision.

Backcheck: Resolved.

18. Page 4-4. Section 4.4. Bottom of page. The text indicates that in Reach 7 the channel widening was replaced by a bypass instead of raising the bench to 6 to 8 feet to reduce SRA cover impacts as in other reaches. Explain why raising the bench is infeasible in Reach 7, while it is feasible in other reaches. Optimizing the bench elevation that balances SRA cover losses/mitigation success and real estate needs in combination with a lengthened construction period should be considered in-lieu of a bypass to lessen project costs and SRA cover impacts.

Response/Action: Concur. Text will be added to LRR:

SPN made a decision not to reformulate alternatives for the Valley View Plan, but to use NMFS consultation (documented in Letter in Attachment 4 of the LRR) as a guide for modifying the Valley View Plan to make it acceptable to the regulatory agencies. The District's decision was additionally based and justified on the fact that the available right-of-way as well as site-specific conditions and requirements for on-site mitigation make it unlikely that other alternative features in lieu of a bypass would be acceptable. The bypass channel in the LPP was initially proposed by the SCVWD as a result of early and extensive coordination with the resource agencies and their concern over minimizing impacts.

Backcheck: Resolved.

19. Page 4-6. Top of page. Provide more detail on the soil analysis that was performed and the results that determined that it would be infeasible to establish riparian forest in Reach 7. Indicate whether the alternative of raising the bench was considered to address this issue.

Response/Action: Concur. The following text is added:

The soil condition in question is a very thick layer of dense "fat" clay that starts 10 to 16 feet below the surface in this reach and extends for an unknown distance deeper. This material is entirely unsuitable for growth of local lower-bank riparian tree species due to difficulty in root penetration and limited water availability. Excavation of a bench in this reach would result in mitigation plantings being made in this clay. Similar clay in the downtown Guadalupe River project was excavated several feet deep and replaced with better soil prior to planting for this reason. However, the higher water velocities in this reach would make large-scale soil replacement impractical. Even with replacement of several feet of soil, trees would be unable to reach deep groundwater through the clay and would not provide adequate mitigation benefits to offset project impacts. These conclusions about mitigation plantings were coordinated with the SCVWD's restoration specialist.

Backcheck: Resolved.

20. Page 5-1. Section 5.1.1. Second paragraph. First sentence. Indicate whether the changes being referred to are the ones identified earlier in the report.

Response/Action: Concur. The changes in the project which caused increased riparian impacts were several minor modifications such as a wider bypass outfall in Reach 11A and changes in bank excavation and maintenance road alignments in Reaches 11B and 11C. There were also several corrections of mathematic errors which increased total impacts by a fraction of an acre. This text is added to the LRR.

Backcheck: Resolved.

21. Page 5-1. Section 5.1.1. Second paragraph. 3rd sentence. It is understood that preparation of a ROD is at the direction of SPD and not as a result of the ITR. The 3rd sentence should be modified to indicate that existing ROD is not being replaced but is being either amended or supplemented. The distinction between a supplemental and an amended ROD is whether the new ROD changes any aspect of a prior ROD. A supplemental ROD does not alter the original ROD for an EIS. A supplemental ROD announces one or more decisions that were not included in an earlier ROD or it adds to an earlier decision, building upon rather than altering the prior ROD. An amended ROD reports a change in the decision. The new decision might reflect changes in circumstances and priorities or new information, in this case, the results of Section 7 consultation or PED studies.

Response/Action: Concur. As per SPN Counsel (Merry Goodenough) we will prepare a supplemental ROD. Text is changed in LRR to indicate that we will prepare a supplemental ROD.

Backcheck: Resolved.

22. Page 5-1. Section 5.1.2. Indicate whether formal consultation will be necessary to change the construction period to 9 years.

Response/Action: Concur. Sentence is added to end of paragraph:

Reopening of formal Section 7 Consultation with NMFS will be required for construction to be completed in nine years.

Backcheck: Resolved.

23. Page 5-1. Environmental Compliance and Documentation. Include a section on cultural resources to describe the results of cultural resource studies that have been conducted in during PED and what inventories/surveys or other actions remain and are necessary for construction to commence. Table 5.3-1 only indicates that that feasibility-level cultural resources coordination has been completed and that a treatment plan and MOA will be prepared prior to construction. The report indicates construction is scheduled to start in first quarter of FY 2005.

Response/Action: No additional cultural resources studies have been conducted during PED. Construction that is expected to start in first quarter FY05 is only for Reach 10B. Construction of this short subreach will require a treatment plan and MOA. The remainder of construction is at least two years away and will require similar cultural resource compliance work. Text has been added to the LRR.

Backcheck: Resolved.

24. Page 5-3. Table 5.1-2. This table should also include the BO term and condition of creating an additional 8,462 linear feet of SRA cover as contingency to ensure that the 1:1 no-net loss compensation ratio is met. The requirement to mitigate for the loss of undercut banks should also be identified in the table.

Response/Action: Partially concur. See response to comment 9 regarding SRA mitigation. The requirement for 1720 feet of undercut bank mitigation will be added to the table. Text is added to indicate this.

Backcheck: Resolved.

25. Page 5-4. Section 5.1.6. Coordination Act Report. The report indicates that the District intends to update the Final CAR when minor design refinements have been determined. SPN should review FWCA post-authorization reporting requirements in ER 1105-2-100, page C-22, to determine whether a FWS report should accompany the LRR. According to ER 1105-2-100, Section 2(b) (Report) of the FWCA is mandatory when changes to the authorized plan meets the Section 2(a) threshold test and the proposed changes to the authorized plan or project require a report to Congress, or the approval of the Chief of Engineers, or above.

Response/Action Taken: Not concur. The modest changes to the *authorized plan* (the LPP) *do not* require a report to Congress or the approval of the Chief of Engineers, and lie entirely within the discretion of the District Engineer. The reason for the LRR is a modification in the design and cost of the NED plan, with the result that the 902 limit is exceeded. In addition, the District has chosen to propose full cost-sharing of the authorized plan based on this new information.

This issue was brought up previously during the ITR process and was coordinated with our Office of Counsel, which concurred with this conclusion.

Backcheck: Resolved. Issue has been addressed as recommended in the comment.

CESPK-PD-WC

(Final Backcheck) 21 Apr 2004
(Interim) 15 Apr 2004
(Interim) 29 Sep 2003
(Initial) 15 August 2003

UPPER GUADALUPE RIVER PROJECT, CA, LIMITED REEVALUATION STUDY INDEPENDENT TECHNICAL REVIEW OF DRAFT LRR FOR PLANNING COMPLIANCE

1. Reviewer: Ron Ganzfried, Water Resources Planning Specialist, Sacramento District, Planning Division, Water Resources Branch, CESPK-PD-WC.

2. Material Reviewed: Draft LRR/Post Authorization Change Decision Document

3. Purpose and Requirements of the Draft LRR/Post Authorization Change Decision Document (SPD Milestone F5): Present results of limited reevaluation studies, updated economics and environmental assessment for final alternative plans and rationale for recommendation of proposed modification to the authorized plan; project partner/sponsor will reaffirm commitment and willingness to implement and O&M the proposed action; review of Federal interest. Overall, it is most important to clearly layout both the Authorized Plan (aka: LPP & Bypass Channel Plan) and NED Plan (aka: Valley View Plan & Channel Widening Plan), what has changed in both, and explain why.

4. Key References:

   a. CESPD-R-1110-1-8, Quality Management Plan, Appendix C.
   b. CESPD-ET-P, Implementation Guidance for Post-Authorization Decision Documents.
   c. ER 1105-2-100, Planning Guidance Notebook

5. General Comments.

a. The Draft LRR is only partially consistent with the requirements for post-authorization decision documents (as in 4.a and 4.b, above). Considerably more work and information is needed to develop, refine, and assess complete alternative plans (including mitigation, recreation, betterments, public access and safety, OMRR&R) and to assess potential environmental effects and associated costs and benefits/outputs (monetary and non-monetary) as a basis for rationale and justification for recommended action.

Response/Action: Revised entire report content and format for consistency with key guidance requirements.

Backcheck 1: Response accepted.

b. From now on, refer to the subject document as a "Post-Authorization Change Report/Decision Document because the moniker of LRR appears to be inappropriate (per reference 4.b, paragraph 8.d). For example, it appears that an EIS-EIR or Supplemental EIS-EIR is required to assess the potential effects of the authorized of modified project on Federal or State listed or candidate T&E species that were not adequately considered at the time of project authorization. If true, then the PAC report would be subject to more requirements, such as those of a GRR rather than an LRR (see reference 4.b). More on compliance with reference 4.b follows under specific comments.

Response/Action: Not concur. Per reference 4.b., paragraph 3.d., a Limited Reevaluation Report (LRR) is defined as a report that documents the analysis and evaluation of a specific portion of a plan under current policies, criteria, guidelines; and may be limited to economics or environmental effects. In the case of this LRR, we are reevaluating the economics of the authorized plan in order to comply with current guidance (site 3 year guidance). We also detailing the reanalysis of the environmental aspects of the Valley View Plan in order to comply with criteria and guidance set by NMFS (see 2000 letter). Additionally, the decision to classify the report as an LRR is based on direct guidance received from SPD-DST.

Also, a new or supplemental EIS/EIR is not necessary because the effects of the alternatives on the steelhead trout and its habitat were considered adequately in the EIS based *on the best available information at that time*. The key points are that: 1) The subsequent designation of critical habitat added additional legal protection to the habitat; 2) NMFS did not provide input on the effects and acceptability of the Valley View Plan until April 2000, long after completion of the feasibility study and planning EIS/EIR in 1998. Also, thermal impacts of the LPP on the steelhead trout received additional discussion in the 1999 regulatory EIS/EIR due to the availability of completed thermal modeling results from the non-federal sponsor's contractor. The current intent is to not create significant additional thermal impacts beyond those disclosed in that EIS. Impacts not previously disclosed are being not planned so additional NEPA/CEQA compliance is not needed.

Backcheck 1: Partially accepted. While is recognized that full NEPA/CEQA compliance may not be needed at this time, it may be when and if pending design and cost estimates are completed and require new analyses, disclosure, and new decision documents and/or reauthorization. Perhaps the point was lost when mentioning NEPA/CEQA compliance, however, the issue of ESA compliance was also stated and it appears that formal consultation will be required to address the newly proposed modification to shorten the construction period for the authorized bypass plan. In their April 5, 2000 letter, NMFS states that "...We cannot endorse a shorter construction period [than 25 years] at this time without adequate evidence that trust resources would be sufficiently protected, and without formal reopening formal consultation under the ESA."

The statement that "there are no changes or modifications proposed to the authorized Bypass plan" is no longer true. It is now proposed that the construction period be reduced rather substantially, which would decrease costs and still provide adequate and acceptable mitigation for related impacts. This would seem to be a trigger for new disclosure via appropriate NEPA/CEQA documentation. (2) For the last sentence, do you mean that, "no NEPA/CEQA compliance is required because nothing has changed in the authorized project" inferring that no impacts = no need for disclosure or "there is no plan to disclose impacts that were not previously addressed, therefore NEPA/CEQA compliance is not required?" Please clarify.

PDT Response to BC 1: Concur with point that the statement-- there are no changes or modifications proposed to the authorized plan -- is no longer true. The report no longer states this. The issue has been coordinated with SPD planning staff (Robin Mooney and Todd Snow and it has been determined that the acceleration of project construction can be addressed in the ROD since there are no new impacts based on the revised thermal modeling.

NMFS changed position somewhat, with January 2004 letter (See Enclosure 4), stating that preliminary results of temperature modeling show the 9-year construction period (recommended by the LRR) appears to be acceptable. Formal consultation will be opened after design for the authorized plan is finalized/more complete.

A new ROD, which ties the results of the 1998 and the 2000 EIS/EIR together and applies them both to the federal project is currently being prepared. See Section 5.1.1 in LRR for further details. Additional NEPA/CEQA documentation is not needed to make decisions associated with this LRR; however, it may be needed prior to construction. A listing of additional consultation that will be completed prior to construction of applicable reaches is documented in Section 5.3.

Backcheck 2: Response accepted.

c. Suggest modifying the introductory paragraphs and elsewhere as appropriate, to better inform the reader that the primary purpose of this PAC Report is to update economic and environmental, and other pertinent information, for decision makers to justify modifications to the authorized project. Substantial improvements are needed to clearly "tell the story" of the need to modify the authorized project and present the results of the process to refine the plans and provide a compelling rationale for approving proposed modifications or reauthorization.

Response/Action: Concur with recommendation to "tell the story" in more detail. Final report will provide history of the events that occurred post-authorization and led to the modification of the Valley View Plan. Introductory paragraphs substantially modified.

Backcheck 1: Response accepted.

d. To expedite the process of decision-making and project implementation, an In-Progress Review or Issue Resolution Conference (IPR or IRC) meeting should be held to engage South Pacific Division/higher authority to address and determine the status, scope, and direction of required PAC studies, coordination, and documentation efforts.

Response/Action: Not concur. SPD was engaged multiple times prior to the completion of the draft LRR. A 30 May 2003 Memorandum for the Record distributed by SPD documents the status, scope, and direction of the LRR represents the strategy, which was used to draft the LRR. HQUSACE MSC also participated in this meeting.

Backcheck 1: Partially accepted. The purpose statement in your current draft LRR deviates from the agreed-upon language in the guidance provided in the Memo of 30 May 2003. While not expected at this time, an IRC may be necessary if policy issues remain unresolved after revision and delay the submission of the Draft LRR to the ITRT, SPD, and HQUSACE.

PDT Response to BC 1: Additional meetings and strategy sessions regarding the LRR have since taken place with SPD. SPD has informally coordinated with higher HQs. Because of the proximity of SPN to SPD these meetings were spontaneous and informal and as a result there were no meeting minutes or records. A copy of suggested comments/modifications to the LRR (highlighted in pen on the LRR documented) recently completed by SPD exists, however, and can be furnished to the ITR team via e-copy.

Backcheck 2: Response accepted. Please furnish copies of meeting minutes/ documentation to the ITRT, SPD/DST, and HQ/RIT for the record.

e. Specific comments follow.

6. It is critical to comply with the requirements of reference 4.b, which are repeated here for clarity, below. Revise the PAC Report to meet the following specific requirements. If you believe that certain requirements have been adequately addressed, then specify where in the document.

a. Specific Requirements. The post-authorization decision document that is used to support a project cooperation agreement must, with the feasibility report, form a complete package that at a minimum:

(1) Fully describes the scope and economic justification of the project;

(2) Describes any changes and provides the rational for such changes from the latest approved report;

(3) Addresses any unusual technical or policy aspects of the project, such as credits, betterments, or the inclusion of a locally preferred plan;

(4) Fully describes the Federal and non-Federal allocation of costs among separable elements, project purposes, and betterments;

(5) Certifies compliance with National Environmental Policy Act and any other applicable Federal statutes;

(6) Provides an M-CACES cost estimate and evidence of a value engineering study;

(7) Reaffirms the sponsor's financial willingness and capability to participate in project cost sharing and to assume OMRR&R responsibilities;

(8) Incorporates any further actions required during design, based on the Report of the Chief of Engineers or the Report of the Assistant Secretary of the Army for Civil Works; and,

(9) Incorporates all real estate requirements for the project, including a real estate plan supported by an approved gross appraisal.

Response/Action: Concur: LRR has been reformatted to address these requirements. Some information cannot reasonably be incorporated into the LRR document (i.e., MCACEs) but is on file with SPN and referenced (by location) in the report.

Backcheck 1: Response accepted.

b. Consider reformatting the document to demonstrate compliance with the 16 topics as suggested in the guidance, paragraph 8.e. (which were provided to the PDT for clarity). While many have been adequately addressed in the current document, many have not. Another option would be to include these topics in one chapter or an appendix. This would greatly aid reviewers on the ITR Team and at higher Corps echelons and other decision-makers.

Response/Action: Concur. While guidance states that 8.e. is only suggested as a general guide, concur that adding additional detail would aid reviewers. Final report will add item 3, *Funding Since Authorization,* 6, *History of Project*, and include additional information associated with item 14, *Environmental Considerations in Recommended Changes.* Other topics are either already addressed or not relevant. Will add appendix to report, as suggested, with 16 topics from 8.e. with page or table references to main report where these topics are discussed. If not discusses, will explain why not pertinent.

Backcheck 1: Accepted, pending verification during review of revised Draft LRR.

PDT Response to BC 1: LRR has been reformatted to include these section headings were appropriate.

Backcheck 2: Response accepted.

7. Section 1, Purpose.

a. Revise this section to clarify and address the need for a PAC Report. Explain why the authorized project must be modified, and that the PAC Report presents results of efforts to describe, evaluates, and justifies such modifications. Consider moving part of the second sentence under Section 3, as appropriate.

Response/Action: Partially concur. Will revise to clarify this salient point as well as reasoning behind why Valley View Plan is modified. Will also revise 2nd paragraph, which states that the Valley View (NED, but not authorized plan) required modification because of "post-authorization changes in federal environmental law, the Valley View Plan requires modification because the Corps learned subsequent to authorization of the Bypass Plan (with the stipulation that Valley View set the limit of the federal cost share) that the Valley View Plan was unacceptable to NMFS and would likely result in the issuance of a jeopardy opinion if it were ever intended for construction. While it was never intended for construction, an NED plan, must in theory be implementable and acceptable to federal regulatory agencies. Modification, including increased mitigation where possible, was therefore needed to bring the NED plan to an acceptable and potentially implementable level.

Backcheck 1: Partially accepted. See Backcheck 1 comments 5b. and 5c.

PDT Response to BC 1: LPP changes are also documented and the need for them is explained in Chapter 1, Introduction.

Backcheck 2: Response accepted.

b. It is not clear that the second paragraph is entirely appropriate. Please explain why and how the Valley View Plan (aka, NED Plan) is being modified and evaluated along with the Bypass Channel Plan, which is the Authorized Plan (aka Recommended/LPP). To what extent is it necessary to further modify the Valley View Plan? Is it appropriate and agreeable to simply adopt and apply the cost-sharing percentages prescribed in the Chiefs Report for the Authorized Project and essentially drop the Valley View Plan from further consideration to focus solely on refinement and modification of the Authorized Project?

Response/Action: See above - modification of the Valley View Plan is essential and the crux of the purpose behind the LRR. The aim of the LRR is to put the Valley View Plan to rest but this can't be done, until costs for this plan (which sets basis for cost sharing of authorized plan) are revised, updated, and accurately represented. The cost-sharing percentages prescribed in the project authorization and the Chief of Engineer's Report are not fixed for the bypass plan. They are instead based on the local sponsor paying 100% of the incremental cost in excess of the NED plan, to construct the LPP. Our LRR maintains the original cost prescription.

Backcheck 1: Partially accepted. Explain that the two plans and their implementation plans, and OMMRR&R are now nearly identical, except for the level of protection and related real estate costs (i.e., what, why, how, when, where, who).

PDT Response to BC 1: LRR Purpose has been modified to include reference to need for changes and modifications to both plans.

Backcheck 2: Response accepted.

c. Please define and describe the specific change(s) in federal law that is cited throughout the documentation as basis for the PAC Report and reauthorization.

Response/Action: Concur. See response to comment 7a. The LRR was partially in error citing a change in federal law as the basis for the report. The basis instead is NMFS consultation. This will be defined and described in greater detail.

Backcheck 1: Accepted, pending verification during review of revised Draft LRR.

PDT Response to BC 1: The actual primary purpose of the LRR (as agreed upon with SPD-DST through personal communication in March 04) is to address the 902 limit. The results of NMFS consultation are no longer cited as the basis for the PAC and reauthorization. NFMS consultation however, is still relevant and is detailed in Section 1.4, Chapter 5, and Enclosure 4.

Backcheck 2: Response accepted.

d. Describe how approval of the PAC Report will facilitate implementation of the authorized project, with proposed modifications, and related downstream projects for watershed-wide benefits.

Response/Action: Concur. Approval of the LRR will facilitate implementation of the authorized project because it will document and detail the current correct federal cost share based on the original cost-sharing prescription contained in the 1999 project authorization. This information will be necessary when it is time to draft the PCA. I will incorporate this above info into the LRR. The LRR also provides the necessary 3-year update of benefits and costs for the authorized project to proceed into construction.

Backcheck 1: Partially accepted. See Backcheck 1 comments 5b. and 5c.

PDT Response to BC 1: Section 1.2, Purpose, discusses the facilitation of implementation—"The LRR will support decision-making by Congress, the U.S. Army Corps of Engineers (Corps), Santa Clara Valley Water District (SCVWD), who is serving as the non-Federal sponsor, and other responsible agencies, to implement the proposed project modifications and ensure compliance with the National Environmental Policy Act (NEPA), California Environmental Quality Act (CEQA), and other pertinent laws and regulations."

Information presented in response/action above regarding current Fed. cost share is documented in Ch. 7, Cost Apportionment. Updates of costs and benefits are presented in Ch. 6, NED Benefits and Costs.

Backcheck 2: Response accepted.

8. Section 2, Scope. Revise and edit this section. The text describes references and study authorizations, not scope. Thus, (a) move and revise the existing text under Section 3, "Study Authority," and (b) describe the scope and content of the PAC Report and how it will likely be used with the Feasibility Report and PCA to justify modification and implementation of the authorized project.

Response/Action: Concur. Will make suggested changes and additions to make scope section, relate more directly to the project specific issues contained within the LRR.

Backcheck 1: Accepted, pending verification during review of revised Draft LRR.

PDT Response to BC 1: References and study authorizations have been removed from new scope section 1.3 and additions have been made so the scope relates more directly to the project specific issues contained within the LRR. Reevaluated costs and benefits and net benefits are calculated to ensure that the project remains economically justified and a sound investment for the Federal Government. The Federal and non-Federal cost sharing for the project is also reestablished. In order to examine cost sharing under the original cost sharing prescription set forth by the feasibility report, the Valley View Plan has also been reevaluated and modified for environmental compliance. Associated costs and benefits are presented and compared to those of the authorized project.

The scope and content of the LRR in combination with the 1998 Feasibility Report contains the information needed to justify modification of the authorized project and support reauthorization of the authorized project as modified. This LRR along with the 1998 Feasibility Report, a future Project Cooperation Agreement, and continued documentation of NEPA compliance will support implementation of the project.

Backcheck 2: Response accepted.

9. Section 3, Study Authorization. Revise and edit this section,

a. Delete the existing text, move part of second sentence to Section 1, Purpose as appropriate.

b. Sentences and paragraphs are redundant.

Response/Action: Concur. See above comment

Backcheck 1: Accepted, pending verification during review of revised Draft LRR.

PDT Response to BC 1: See Chapter 2 of report titled "Project Authorization and Authorized Plan Description." Entire section was rewritten to remove redundancy and make read clearly. Anything pertaining to purpose was removed and fit into purpose section was also completely rewritten.

Backcheck 2: Response accepted.

10. Section 4, Project Description.

a. Subsection 4.1 – Integrate a discussion of the authorized project in relationship with its downstream counterparts, in a watershed context; including the commitments to manage the series of projects to minimize cumulative adverse impacts and optimize beneficial environmental, hydrological, and other effects through effective management techniques.

Response/Action: Discussed in Section 7.3, Other Considerations. Discussed in relation to consistency and a watershed approach.

Backcheck 1: Response accepted, pending verification during review of revised Draft LRR.

PDT Response to BC 1: Following discussion was added, in Section 7.3.2, *Watershed Approach and Consistency with Other Projects*:

While not necessarily a factor in determining the Federal interest, consistency with additional projects in the river is a factor in taking a systematic and holistic approach to treatment of watershed resources. Consistency is also extremely important to the non-Federal sponsor and the local community, who demand the Water District provide a level of protection comparable to that offered by neighboring projects. Currently, the Corps is constructing a 100-year Guadalupe River Flood Damage Reduction Project in downtown San Jose, immdediately downstream of the Upper Guadalupe River Project area. Constructing a 100-year project for the Upper Guadalupe Project would result in consistency of hydraulic conditions between the two reaches of the river. This would also facilitate the Corps' commitment to manage the series of projects to minimize cumulative adverse impacts and optimize beneficial environmental, hydrological, and other effects through effective management techniques.

Backcheck 2: Response accepted.

b. Add a new Section 4.3, "The Authorized Project," and change numbering thereafter.

Response/Action: A similar section has been added; numbering and format have changed significantly.

Backcheck 1: Accepted, pending verification during review of revised Draft LRR. However, carefully consider Backcheck 1 comments 5b. and 5c.

PDT Response to BC 1: As the entire report has been redone and reformatted, numbering no longer applies. However a section documenting the authorized project has been added and improved. This section is now 2.2, Description of Authorized Project

Backcheck 2: Response accepted.

c. Change header 4.3 to 4.3.1, Project Authorization. Move the first three sentences to become the first paragraph under Section 3, Study Authorization. Edit the remaining text to clarify/explain briefly what it means, and the key differences between the NED Plan (for cost-sharing purposes) and Authorized Project (drop references to LRR wherever possible, once defined). Perhaps this would be a good place to present a summary table from the 1998 Feasibility Report/EIS-EIR showing key features, costs, and responsibilities as a basis for comparison and updates herein.

Response/Action: Numbering and format have changed significantly. Key differences in design features and project costs between 1998 and 2004 Valley View plans and 1998 and 2004 Bypass Channel plans (LPP/modified) are presented. Comparison of environmental conditions associated with 2004 Valley View and 2004 LPP are presented in a new table in Section 7.3.

Backcheck 1: Accepted, pending verification during review of revised Draft LRR.

PDT Response to BC 1: See Table 3.4-1 Engineering Modifications to the Authorized Plan for differences in design between 1998 and 2004 LPP, and Table 3.6.2-1 Authorized Plan Cost Allocation, which presents cost differences. 1998 and 2004 VV plan design differences presented in Table 4.4.1-1, Modifications to Valley View Plan. Cost differences in table 4.5-1. table 3.5-1 shows environmental affects of changes to LPP. Impacts as documented in Ch. 4, will be similar for Valley View as for Bypass, but smaller.

Backcheck 2: Response accepted.

d. Add a new Section 4.3.2 by incorporating much of the text from the Chiefs Report, dated 19 August 1999, verbatim and as appropriate.

Response/Action: Concur. Will incorporate more of the information contained within the Chief's Report.

Backcheck 1: Accepted, pending verification during review of revised Draft LRR.

PDT Response to BC 1: Made additions that applies to overall project (cost sharing prescription) is reworded verbatim in Sec 2, that which applies to LPP and LPP features is now contained verbatim in Section 3, and VV in Section 5.

Backcheck 2: Response accepted.

e. Section 4.4, Environmental Compliance. Explain specifically what law has changed and how it affects or requires project modification. Explain "...the Central Coast Unit..." of what? Identify/explain whom or what entity designated the critical habitat area, when, and implications for modifying the authorized project. Again, it appears that HEP analyses, Supplemental EIS-EIR, value engineering, temperature modeling, redesigns in features and mitigation and OMRR&R would be required.

Response/Action: Not concur: First, the National Marine Fisheries Service (NMFS) finally provided substantive input on the acceptability of the Valley View Plan in a letter dated April 5, 2000. This was their first comment on this plan despite several years of efforts to coordinate with them. Previous comments from them were general or procedural rather than substantive and specific. We will provide documentation of these efforts at coordination. Second, no law was changed, but critical habitat for the steelhead trout was designated by NMFS on February 16, 2000. This designation has been temporarily suspended while a new analysis is conducted by NMFS. The "Central Coast Unit" referred to is the Central Coast Evolutionarily Significant Unit of the steelhead trout. See also response to 7a.

Regarding HEP analysis, the 1997 HEP used two sets of sample plots and two sets of proposed mitigation planting types for evaluation of riparian forest impacts under the Valley View Plan and the LPP due to significant differences between the characteristics of impacted areas as well as the types of mitigation plantings proposed under these two plans. However, the revised Valley View Plan closely parallels the LPP in terms of the biological characteristics of impacted habitat and types and locations of riparian forest mitigation plantings. For this reason, we do not believe that a new HEP is needed as the compensation ratio used for the LPP can reasonably be applied to the revised Valley View Plan. Impact acreages for the revised Valley View Plan have been quantified and the compensation ratio for the LPP applied to determine riparian forest mitigation needs. For the same reason, the aquatic habitat HEP is considered to still be a valid basis for analyzing the impacts of the revised Valley View Plan.

See response to comment 5.b. regarding NEPA/CEQA compliance. Thermal modeling of the LPP is in progress; since the revised Valley View Plan will have lesser impacts over the same period of time, its thermal impacts will be less than those of the LPP. Compliance of the LPP with Endangered Species Act requirements will ensure acceptability of the Valley View Plan if it were to be built. Mitigation for the Valley View Plan was substantially revised for the LRR. Please refer to the Environmental Appendix for a discussion of mitigation requirements for the revised Valley View Plan.

Backcheck 1: Partially accepted. See Backcheck 1 comments 5b. and 5c.

PDT Response to BC 1: LRR has been changed so that it documents and explains environmental compliance to a greater extent as suggested. Additionally, it is agreed that if and when Supplemental NEPA/CEQA documentation may be required (i.e., before construction), it shall be provided.

Backcheck 2: Response accepted.

f. Section 4.2.2. Add summary table with listed and candidate Federal and State special status species of concern associated with the study area, with key requirements and responsibilities, and commitments. Revise subsections to expand discussion by treating existing text as problem statements and adding new assessment for each by identifying potential effects and actions needed to modify the Authorized Project.

Response/Action: There is only one listed or candidate species present which significantly affects the proposed project- the steelhead trout. Minor requirements for the burrowing owl and western pond turtle affect project construction but not project design and were discussed in the EIS/EIR. Most of the information requested in this comment is superfluous, as it would not affect the decision being made. We agree that a more detailed description of the steelhead trout, with key requirements, responsibilities, and commitments would be desirable.

Backcheck 1: Accepted, pending verification during review of revised Draft LRR. However, carefully consider Backcheck 1 comments 5b and 5c.

PDT Response to BC 1: Chapter 5 contains updated information on requirements, responsibilities, and commitments — see specifically, Table 5.1-1, Major Water Quality Certification Requirements, Table 5.1-2, Reasonable and Prudent Measures and Terms and Conditions, in the Biological Assessment. For more detail on description of steelhead trout, beyond that covered in the Revised main report, see 2.0, Study Area Environment of the Environmental Appendix.

Table 1 in the environmental appendix and the text paragraph above it address the comment to the degree appropriate for all species other than the steelhead trout. For that species, we have extensive discussions in the LRR and appendix, which address the comment. No further action is needed.

Backcheck 2: Response accepted.

g. Section 4.5. Proposed Modifications to the Authorized Project? Clarify and explain the findings and recommendations. Identify required mitigation measures, monitoring plan, OMRR&R, and related benefits, costs, and cost sharing requirements. Provide adequate justification and compelling rationale for proposed project modifications.

Response/Action: Modifications to NED and LPP will be presented more thoroughly and will include rationale, which results from new environmental criteria NMFS consultation and from other PED level design changes and updated information.

Backcheck 1: Partially accepted. See Backcheck 1 comments 5b. and 5c.

PDT Response to BC 1: New Section 3.4, Specific Modifications to the Authorized Plan, describes need and reasoning and rationale for minor modifications. As discussed in this section minor PED level changes are the following (not requiring an LRR, but mentioned since they are important in calculating new costs) – cribwalls are now used where due to space considerations it is impossible to use gabions as before, and a bridge is no longer part of the project because the city has removed this. The construction schedule change is discussed in this chapter as well and preliminary results have been approved by NMFS (see enclosure 4, January 2004 letter). Mitigation and monitoring plan detailed in 3.4.3. Costs benefits moved to Ch. 6, cost-sharing requirements moved to Ch. 7 as well as Recommendation Chapter. OMRR&R discussed in Recommendation Ch., however there are currently no changes to OMRR&R from the 1998 Feasibility Report.

Backcheck 2: Response accepted.

11. Section 5, Reevaluated Project Costs. Support the 11-year construction period with a Value Engineering study. Why not use the same type of temporary shade control measures that will be provided for the Downtown Project reach currently being implemented for the upper reaches in the Authorized Project to speed up the process?

Response/Action: See environmental comments.

Backcheck 1: Pending review of response.

PDT Response to BC 1: New Support Letter From NMFS (JAN 2004) now included, also temp modeling graphs incorporated which together support that a nine year const. schedule will likely be adequate. This will be confirmed by new temp. modeling and NMFS formal approval through sec. 7 when design of applicable is finalized or finalized to a greater extent. VE studies will be considered and implemented where appropriate prior to construction. The Corps has committed to this through VE memo (see Brandon Muncy/Syed Burney). Also a VE study (furnished to ITR team in March 2004) took place in 2002 and looked at some possible measures to reduce construction period. These ideas (including temp. shade structures) along with future VE ideas will be considered as design for applicable reaches is completed or reaches or a more detailed state.

However, use of temporary shade structures in areas intended for mitigation plantings would slow growth of these plantings substantially and would impair the health of lower-bank riparian tree species which require full sun, requiring additional mitigation plantings to compensate for this loss. Trees growing under artificial shade would tend to grow tall and lanky, resulting in interference with the shade structure and inadequate shade once it is removed. This proposal would probably not be acceptable biologically given the nature of the mitigation areas in the Upper Guadalupe River project, which lack the hardscaped low-flow channel without vegetation found in parts of the Downtown Guadalupe River project.

Backcheck 2: Response accepted.

12. Section 6. Risk Analysis. Replace the discussion of the method with one summarizing results, findings, conclusions, and recommendations.

Response/Action: Economics and H&H sections are responding.

Backcheck 1: Pending review of response.

PDT Response to BC 1: Except for discussion of residual risk in other consideration, sec. 7.3, this section has been deleted from text. H&H appendix incorporates this information.

Backcheck 2: Response accepted.

13. Section 7. Reevaluated Project Benefits. EQ account and analysis should be presented and non-monetary outputs identified. Apply and summarize cost-effectiveness/incremental cost analysis for the proposed mitigation measures and related design and management modifications to the Authorized Project. Also, display consideration of recreation benefits.

Response/Action: Environmental Section is responding. See also response to 9.e.

Backcheck 1: Pending review of response.

PDT Response to BC 1: The environmental analysis (akin to EQ) is now presented in table 7 of the Environmental Appendix attached to LRR. An ICA was not done for proposed mitigation actions because of the lack of cost breakpoints within the two mitigation types. A consideration of Recreation Benefits is presented in Table 6.1-2, Authorized Plan (Modified) Benefits and Costs, Factoring Recreation *October 2003 Price Level and 5.625% Discount Rate, 50 year period of analysis (Monetary Values in $1,000's)* and further discussed in 6.1 as well as 7.3.3, *Recreation Section*, which gets into more detail on recreation benefits.

Backcheck 2: Response accepted.

14. Section 8. Economics Justification. Needs revision. Missing complete consideration of monetary and non-monetary benefits/outputs and compelling justification. Also suggest presenting EQ, RED, and OSE accounts in addition to NED.

Response/Action: Mitigation outputs were considered for development of mitigation plan, environmental is responding to these comments, which are similar to comment 12. RED and OSE will not be presented as they are beyond the scope of the LRR. An initial analysis of these accounts for the authorized plan (remains unchanged) is presented in the 1998 Feasibility Report.

Backcheck 1: Pending review of response.

PDT Response to BC 1: Section was substantially revised and incorporated into Section 6.

Backcheck 2: Response accepted.

15. Section 9, 902 Limit. Does the partner/sponsor still intend to support the Authorized Project with proposed modifications, and are they financially capable and committed? Based on the comments herein and other ITR comments, it is expected that costs will be greater than those included presently in order to comply with legal and policy requirements.

Response/Action: Will include section on financial capability/commitment.

Backcheck 1: Response accepted.

16. Section 11, Quality Management, Second Sentence, the cited regulation is incorrect, the 30 December 2002 version should be used.

Response/Action: Concur.

Backcheck 1: Accepted, pending verification during review of revised Draft LRR.

PDT Response to BC 1: Concur, change will be made to Final LRR.

Backcheck 2: Response accepted.

17. Missing information:

- Conclusion, including compelling rationale for proposed modifications.

Response/Action: Concur, will add.

Backcheck 1: Accepted, pending verification during review of revised Draft LRR. However, carefully consider Backcheck 1 comments 5b and 5c.

PDT Response to BC 1: Based on reformatted/revised (significantly since last version) LRR, this section would be redundant. Conclusions however are made in Chapters 7 and 9.

Backcheck 2: Response accepted.

- Recommendations

Response/Action: Concur, will add.

Backcheck 1: Response accepted.

- Views of Partner/Sponsor, willingness to pay and OMRR&R the modified project.

Response/Action: Concur, will add.

Backcheck 1: Response accepted.

Views of resource agencies and stakeholders.

Response/Action: New detail added in revised Section 1.

Backcheck 1: Response accepted.

- NEPA and CEQA compliance; Supplemental EIS-EIR or FONSI, if possible.

Response/Action: No supplemental needed, but will include more info on compliance.

Backcheck 1: Response accepted.

- Value Engineering Analysis.

Response/Action: Already referenced in reference section, R1. Value Engineering Report was prepared by SPK in 2002. A copy is on file at SPN.

Backcheck 1: Response accepted.

- Summary of cumulative effects and actions to make insignificant.

Response/Action: See Bill D's responses.

Backcheck 1: Unacceptable. Must respond.

PDT Response to BC 1: Concur. Text is added:

The 1998 and 1999 final EISs indicate that the only significant cumulative impacts are: 1) Direct removal of riparian forest and near-term reduction in mature riparian forest; 2) Blocked access to optimum fishery habitat upstream during construction. The first impact will be addressed by two mitigation measures: 1) Minimization of recreation impacts through fencing, posting, and road-siting measures; and 2) Mitigation plantings being made during the first fall planting season after construction. The second impact will be addressed by small upstream fish passage improvements by the SCVWD at existing facilities owned and operated by them, and monitoring of fish passage at these locations to document improvement in fish passage.

Backcheck 2: Response accepted.

- Status of compliance with environmental and cultural resources requirements.

Response/Action: Will provide status update.

Backcheck 1: Accepted, pending verification during review of revised Draft LRR.

PDT Response to BC 1: Status provided, See Ch. 5, specifically new Table 5.3-1, Environmental Compliance.

Backcheck 2: Response accepted.

- Summary of pertinent public involvement activities regarding proposed modifications.

Response/Action: Section 1 revised to include stakeholder involvement information.

Backcheck 1: Response accepted.

18. Seriously consider further modifications to the construction period, while providing adequate and acceptable mitigation, to minimize costs. Redo VE analysis? Why not match commitments made for the "Downtown" Project to use temporary shade trees/structures (over 3-yrs) and adaptive mgmt?

Response/Action: These concerns will be considered during PED. VE done in 2002 is still valid; but will likely take place again before construction of various reaches.

Backcheck 1: Response accepted.

19. We need to reopen consultation with NMFS because their BO is based on a 25-year construction period, but now changed to 11 years, I believe. I would expect their cooperation, not opposition, because of the integrity of the Collaborative process for the downtown project and resultant BO, which was more recent than the one for the Upper Guadalupe River Project.

Response/Action: Please respond.

Backcheck 1: Pending response.

PDT Response to BC 1: Formal Section 7 consultation will be reopened with NMFS upon resolution of minor possible project modifications arising out of studies mandated by the water quality certification. Reopening would therefore be premature at this time. NMFS has indicated in writing their support for the 9-year construction period.

Backcheck 2: Response accepted.

20. It is further recommended that a Supplemental Information Report (EA?) be prepared and circulated with concerned agencies (e.g., USFWS, NMFS, USEPA, RWQCB) to disclose new modifications to the LPP and NED Plan and potential beneficial effects in accord with NEPA/CEQA (as discussed with Lead Environmental Specialist earlier today; pers com. with Bill DeJager, 29 Sep 03).

Response/Action: It is likely that Supplemental NEPA/CEQA will be needed before construction as recommended.

Backcheck 1: Unacceptable.

PDT Response to BC 1: This issue has been coordinated with SPN Office of Council and SPD planning staff as noted in responses to the environmental comments. Their conclusion is that a supplemental ROD will be adequate to address NEPA issues at this time.

Backcheck 2: Response accepted.

21. Did the economics update properly consider the "disbenefits" of delaying flood damage reduction over the 11 to 25 years of construction?

Response/Action: Please respond. Believe so, verifying with ECON

Backcheck 1: Pending response.

PDT Response to BC 1: Yes, the economics analysis took into account the longer construction period and the "disbenefits" associated with it. "Disbenefits" have been accounted for directly via the flood damage model (HEC-FDA) and indirectly through the IDC calculations.

Backcheck 2: Response accepted.

22. The revised Draft LRR must clearly convey/state that the result of new modifications is a scaled-down design and footprint of the LPP, but with 50-yr rather than 100-yr LOP.

Response/Action: Agree, Sec. 6 now contains this language.

Backcheck 1: Response accepted.

QUALITY CONTROL PLAN (QCP)

DRAFT

(REVISED 26 JUNE 2003)

Upper Guadalupe River
Limited Reevaluation Report

ATTACHMENT 1

QUALITY CONTROL PLAN
UPPER GUADALUPE RIVER LIMITED REEVALUATION REPORT
(REVISED 26 JUNE 2003)

1. Description of Limited Reevaluation Report and Study

The purpose of this Limited Reevaluation Report (LRR) is to document the changes to the authorized locally preferred Bypass Channel Plan and the Valley View Plan (NED Plan) which was utilized as the basis for determining the Federal cost share (consistent with ER 1105-2-100, Appendix G, Section III, Post Authorization Changes). Subsequent to project authorization, the Guadalupe River, including the project area, was designated as critical habitat for the steelhead trout listed under the Endangered Species Act. Because of this designation, the Valley View Plan (NED) was extensively revised and updated. The LRR contains the supporting documentation for the Project Cooperation Agreement (PCA) that will support construction of the bypass channel plan as authorized. The non-Federal sponsor for the Limited Reevaluation is Santa Clara Valley Water District (SCVWD) located at 5750 Almaden Expressway in San Jose, CA 95118-3686.

2. Purpose of Quality Control Plan

This Quality Control Plan (QCP) provides an overall plan for producing quality planning, engineering, and real estate products for the Upper Guadalupe River LRR. The San Francisco District's Planning, Engineering, Construction, Operations, and Real Estate Quality Management Plan (QMP) will be followed during the preparation of technical products for this study. The QMP was approved as CESPN Office Memorandum (OM) 1110-1-12, dated 30 November 1999. The QMP establishes the authority for and scope of independent review by the District. This QCP is based on the QMP and the guidance contained in the References cited below. The guidance in the QMP and the referenced documents will be followed.

3. References.

a. CESPD R 1110-1-8, Quality Management Plan, 30 December 2002.

b. ER 1105-2-100, Planning Guidance Notebook, 22 April 2000.

c. CECG/ASA(CW) Joint Memorandum, dated 31 March 1995, Subject: Technical Review Process. [Delete/Superseded?]

d. CECW-A Memorandum, dated 14 April 1995, subject: Implementation of New Technical and Policy Procedures. [Delete/Superseded?]

e. ER 1110-1-12, Engineering and Design Quality Management.

f. CESPD-ET-P, Memorandum, dated 1 September 1995, subject: Implementation of New Technical Review Procedures for Planning Products. [Delete/Superseded?]

g. CESPD-ET-P, Memorandum, dated 6 February 1996, subject: Implementation of New Technical Review Procedures for Planning Products. [Delete/Superseded?]

h. CECW-PW, Planning Guidance Letter 95-2, Alternative Review Process, 25 July 1995.

i. CESPD-ET-P, Memorandum, dated 30 April 1999, subject: Implementation Guidance for Post-Authorization Decision Documents.

j. CESPD-ET-P, Memorandum, dated 31 July 2000, subject: Processing of Planning Reports in South Pacific Division.

k. EC 1165-2-203, Technical and Compliance Review, 15 October 1996.

l. CESPD-CM-P, Memorandum, dated 19 June 2001, subject: Interdistrict Review of Decision Documents.

m. CESPD-CM-P, Memorandum, dated 7 May 2002, subject: Guidance for the Review of Projects Not Yet Under Construction.

4. Statement of Quality Control Process Objective

The objective of this review process is the successful completion and delivery of quality products to customers within budget and on time. The QCP is intended to provide a mechanism to appropriately evaluate technical products and processes to ensure that they comply with the associated laws, regulations and sound technical practices of each technical discipline. The QCP will implement an Independent Technical Review process. This process will include the verification of assumptions, methods, procedures, and material used in technical analyses during the LRR. The Independent Technical Review process will be tailored for each document and will include rigorous documentation requirements to establish accountability. This QCP was augmented to incorporate current interdistrict technical review requirements (paragraph 4a. below) concurrent with (1) draft report submittal to HQUSACE through SPD and (2) release of the draft report for public and agency review.

a. South Pacific Division Policy. Interdistrict Reviews. The July 2000 Engineer Inspector General Report, "Planning for Civil Works Programs", presented a set of recommendations for commanders to improve and retain the Corps' planning capability. One of the report's recommendations was "that division commanders, in accordance with the Regional Business Center concept, actively encourage more use of other districts for independent technical reviews." Interdistrict reviews will ensure the independence of reviews, thus maintaining the credibility and integrity necessary for quality products. Interdistrict reviews will also provide outstanding learning opportunities to understand the way other professionals tackle problems and to learn lessons from the experiences of others. CESPD-CM-P Memorandum, dated 19 June 2001, subject: Interdistrict Review of Decision Documents, established the policy of South Pacific Division for all decision documents for

Congressional authorization shall undergo independent technical review by another district. These decision documents include both feasibility reports and post-authorization decision documents requiring Congressional authorization with an Alternative Formulation Briefing scheduled after 1 January 2002. Other documents may be also reviewed by another district at the request of the district producing the documents.

b. Review Management. All independent technical review work shall be included in the project management plan. As with other reviews, interdistrict review shall be planned in advance and conducted as a continuous and seamless activity with formal documentation prepared for each of the SPD milestones. The producing district shall ensure that the review team shall be given the full funding and time allotted in the project management plan to ensure a prompt and quality independent technical review. The reviewing district shall be accountable to meet reasonably established target dates to complete the independent technical review.

c. Review Team Alternatives. The composition of the independent technical review team may include team members from multiple districts (including districts outside the South Pacific Division), centers of specialized planning expertise, and from other qualified sources such as non-Federal sponsors and other Federal and State agencies. Alternatives available for interdistrict review include: establishment of an independent review team in another district, establishment of a review team composed of regional technical experts from multiple districts or establishment of a multi-organization team that could include contractors, sponsors, different districts, and laboratories. In all cases, the leader of the independent review team would be a regional technical specialist from another district.

d. Review of Contractor Products. Per CESPD R 1110-1-8 (Dec 02), it is the contractor's responsibility to develop a quality control plan (QCP) for products they develop. In order to maintain responsibility, the contractor will be responsible for quality control (QC) of its own work. Quality Assurance (QA) is performed by the District to provide oversight of the contractors QC activities. The contractor's independent technical reviewer recommends certification of the QC process and the principal of the QA process. For decision documents, which include a signed recommendation contracting firm certifies the QC process. The District's responsible function chief certifies of the District Commander (i.e., Final Feasibility Report), both the planning function chief and the District Commander certify the QA process. When products developed by a contractor are subject to interdistrict review, then the independent quality assurance review portion of quality assurance shall be provided by another District. This does not relieve the responsible District from appropriately managing and providing input to the contractor, and certifying the product. (Preceding four paragraphs from CESPN OM 1110-1-12, Appendix C, Planning Branch Products, dated 30 April 2003, Draft)

5. Citation of Quality Guidelines

The guidelines presented in the QMP will be followed for the Independent Technical Review of this study. A copy of the San Francisco District Standard Operating

ATTACHMENT 1

Procedure for Independent Technical Review (Appendix A) is provided as Attachment 1.

6. Proposed Deviations from SOP

Because Inter-District ITR will be completed, an Initial Review Strategy Session was not held prior to QCP submission to Chief, ETS. The Sacramento ITR team will conduct the Initial Review Strategy Session.

7. Functional Chiefs

The following functional chiefs will be responsible for overall implementation of QMP requirements. The Planning Branch Chief has overall responsibility for the technical quality of the planning phase products

Planning Branch	Tom Kendall	CESPN-ET-P
Plan Formulation Section	James Howells, Jr.	CESPN-ET-PF
Environmental Planning Section	Peter LaCivita	CESPN-ET-PP
Environmental Sciences Section	Rod Chisholm	CESPN-ET-PZ
Economics Branch	Kevin Knight	CESPN-ET-C
Engineering Branch	Herb Cheong	CESPN-ET-E
Civil Design Section	Arnold Lee	CESPN-ET-ED
Water Resources Section	S.T. Su	CESPN-ET-EH
Estimates & Specifications Section	Phil Pang	CESPN-ET-EE
Geotechnical Section	Ken Harrington	CESPN-ET-EG
Geographic Information Systems	Dan Specht	CESPN-ET-EI
Real Estate Division	Marvin Fisher	CESPK-RE
Real Estate Acquisition Branch	Ken Fox	CESPK-RE-C

8. Project Delivery Team

The following team members will be responsible for the technical products listed below.

Study Team Leader/Project Planner Plan Formulation Section	Joel Pliskin	CESPD-ET-PF
Water Resources Section	William Firth	CESPN-ET-EW
Civil Design Section	Glenn Gannon	CESPN-ET-ED
Moffatt & Nichol Contract	Juanito Jamias N. Nichols	
Geotechnical Section	Marc Goodhue	CESPN-ET-EG
Estimates & Specifications Section	George Liu	CESPN-ET-ES

Environmental Planning Section Jones and Stokes Contract	William DeJager Jeff Lafer Ann Huber	CESPN-ET-PP
Environmental Sciences Section	Kathleen Ungvarsky	CESPN-ET-PZ
Economics Section	Timi Shimabukuro	CESPN-ET-PC
Real Estate	Susan Miller	CESPN-PM-B

9. SPN Independent Technical Review Team for Quality Assurance

The following technical review team members will be responsible for quality assurance review and documentation described in the QMP and presented in this QCP.

Civil Design Section Moffat & Nichol Contract	Glenn Gannon	CESPN-ET-ED
Environmental Planning Section Jones and Stokes Contract	Bill DeJager	CESPN-ET-PP

10. SPK Independent Technical Review Team

Formation of the inter-District ITR Team will be coordinated by the Review Team Leader, Ron Ganzfried, CESPK-PD.

11. Products to be Reviewed by Independent Technical Review Team.

Draft Limited Reevaluation Report/Technical Appendices

Final Limited Reevaluation Report/Technical Appendices

12. Schedule and Milestones for Review Activities
[THE ITR PERIOD APPEARS TO BE INADEQUATE; WE'LL MAKE EVERY REASONABLE EFFORT TO MEET TARGETS BUT CONTENT AND QUALITY OF LRR, EXTENT OF COMMENTS & AVAILABILITY OF ITR MEMBERS WILL AFFECT ACTUAL TIMING OF ITR PROCESS]

Because the study is an LRR, ITR will only be performed on the Draft and Final LRR. The current study schedule estimates that review documents will be provided to the team on July 15, 2003 and all comments will be resolved on or before July 29, 2003. The PCA package will be submitted to South Pacific Division on July 29, 2003 and forwarded to Headquarters on August 5, 2003.

13. Unique, Sensitive, or High Visibility Items Requiring Special Attention

Through informal consultation, NMFS stated that temperature modeling would need to be conducted to ascertain an acceptable construction schedule. A lengthy construction period reduces environmental impacts, yet greatly increases economic costs for the project and funding required by the local sponsor. Jones & Stokes is currently performing temperature modeling.

14. Independent Technical Review Cost Estimate

The cost of ITR will be coordinated with the Sacramento District. Currently, the total estimated cost of Independent Technical Review for the LRR is $35,000.

15. Views of the Local Sponsor

Non-Federal sponsor funding for the project is linked to a bond that will expire in 2015. As a result, the non-Federal sponsor is anxious for construction to begin and the target construction start date has been set for summer of 2004.

16. Schedule for periodic review and update of the QCP

The QCP will be reviewed after the completion of each of the QC reviews identified above. If it is necessary, the QCP will be revised by a memorandum or e-mail prepared by the review team leader and, if not approved separately through Schedule and Cost Change Requests (SACCR) or changes to the PMP, the revised QCP shall be submitted to the appropriate District functional chief for review and approval. All QCP revisions will become part of the review documentation file.

17. Attachments (Incorporated by Reference):

1. Appendix A: "Standard Operating Procedure for Technical Review" to the San Francisco District QMP (CESPN Office Memorandum 1110-1-12 dated 30 November 1999).
2. Appendix B: Qualification Statements for Technical Review Team for Upper Guadalupe River Feasibility Study, to be completed by Sacramento District.

18. Feasibility Phase Certification

Documentation of the independent technical review shall be included with the submission of reports to CESPD. Documentation of independent technical review shall be accompanied by a certification, indicating the independent technical review process was completed and all technical issues were resolved. The certification requirement applies to all documentation, which will be forwarded to either CESPD or HQUSACE for review or approval. The Chief, Planning Branch, will certify the pre-conference documentation for the HQUSACE issue resolution conferences and the Draft LRR. The District Commander will certify the Final LRR, which includes the signed recommendation of the District Commander. This certification will follow the example included as Appendix I of the CESPD QMP and will be signed by the Chief, Planning Branch and the District Commander.

CESPN OM 1110-1-12
30 November 1999

APPENDIX A

Standard Operating Procedure
for Quality Control of District Products

The following operating procedure for independent technical review of decision and implementation documents will be followed unless specific exception is granted in the Quality Control Plan (QCP):

1. Technical Director and Review Team Leader are assigned.

2. QCP is prepared. The QCP will be incorporated into Project Study Plans or Project Management Plans, where applicable.

3. Initial Review Strategy Session is held to review draft QCP. QCP is submitted to Chief ETS Division.

4. Functional Chief with lead responsibility for the project issues review directive to the Review Team; i.e., a memorandum transmitting the approved QCP to the Review Team for their implementation.

5. Study/Design Team member and the ITR Team counterpart coordinate, schedule, and conduct in-process reviews and these activities in accordance with the QCP.

6. Review team holds organizational meeting and prepares review plan (if required); i.e., a memorandum of the meeting identifying any additional specifics not covered in the QCP.

7. Study/Design Team member requests reviews by Review Team counterpart as products are completed in accordance with the QCP and Review Plan, where applicable.

8. Technical reviews are conducted and documented on checklists and in reviewer's memoranda of review. This may be a single review or an iterative process.

9. Review Team Leader reviews checklist and memoranda for disagreements on technical issues and coordinates with the appropriate technical function supervisor for resolution if disagreements are found.

10. Review Team Leader reviews checklist and memorandum of review for policy issues and coordinates with appropriate Function Chief for possible referral to higher headquarters. Policy issues regarding Project Cooperation Agreements (PCA's) are the responsibility of the Deputy District Engineer for Project Management.

11. Review Team participates in in-progress reviews, technical review conferences, and Milestone Conferences and documents conclusions reached at meetings in review team file.

12. Project Manager along with the Study/Design Team members review the completed documents.

13. Study/Design Team responds to Review Team assessment by memorandum to the Review Team Leader.

14. Review Team considers responses to review comments and identifies any remaining disagreements requiring resolution by appropriate technical function supervisor.

15. Review Team prepares lessons learned report at conclusion of review.

16. Review Team is dissolved and records are transferred to project document files.

17. District Commander and responsible functional chiefs certify quality control/independent technical review.